



SATURDAY, MAY 25, 1872.

Water Crane for Supplying Locomotive Tenders.

At railroad stations where there is any considerable traffic, there is seldom room to spare, near to the track, for a water-tank large enough to supply the locomotives. The size of such a tank must of course bear some relation to the amount of traffic, and the value of the space it occupies is also increased in the same proportion. At all stations, therefore, where there is any considerable amount of business, it soon becomes necessary, or at least desirable, to remove the water tank some distance from the depot building, and at the same time have some provision for conducting the water to the locomotive tenders. The water crane which we illustrate herewith is designed for this purpose. As such appliances must necessarily occupy a very prominent position on the platforms, it is desirable that they should be somewhat ornamental. This—as the engraving will show—has been aimed at by the manufacturer in designing the column of this structure.

The valves and other parts of the water-crane are located in a pit below ground, so as to be out of the reach of frost, and such provision is made that the water is all drained out of the pipe above ground to prevent freezing in cold weather. The construction is so obvious that no explanation is required.

There seems to be a considerable ambiguity in the name which is given to these machines. They are known as water-cranes, water-columns, stand-pipes and pen-stocks. The name which we have chosen seems to have some fitness, and has also the authority of English use.

Messrs. Morris, Tasker & Co. are the manufacturers of the pattern which we illustrate, and which is now in use on a number of roads. They can be addressed at their New York office, 15 Gold street.

Lehigh Coal & Navigation Company.

The annual meeting of the stockholders of the Lehigh Coal and Navigation Company was held at Philadelphia, May 7. According to the report, the company represents in railroads, canal, equipments, etc., \$26,933,296. Its liabilities, less stock held by itself, is, on capital, \$3,272,800, and on bonded debt \$12,728,655, and on other accounts \$2,176,498—making an aggregate of \$33,177,954. The earnings of the company for the past year were \$1,569,199, and the general expenses, interest, taxes, etc., \$1,236,814, giving net profits to the amount of \$272,385. Of the aggregate earnings, \$719,352 were from the railroads and \$160,190 from the canals. The net profits on coal from the Lehigh mines, 518,806 tons, were \$424,921, and on coal from the Wyoming mines, 250,993 tons, \$58,215. The coal tonnage on the Lehigh & Susquehanna Railroad and on the Lehigh Canal, was, for the year 1871, 2,275,206 tons, against 2,143,131 tons in 1870—an increase of 132,075 tons. The production of the company's mines was 769,793 tons, against 478,831 tons the previous year—an increase of 290,962 tons. The principal assets of the company are its railroad, which stands charged at a cost of \$11,989,888. The canal and shipping improvements are valued at \$3,000,000, on which it yields a good revenue. The Lehigh tract of 6,000 acres of coal lands valued at \$853½ per acre, equal to \$5,000,000, and the Wyoming tract of 6,480 acres at \$3,000,000. The remaining assets, consisting of coal improvements, equipments, etc., are unchanged in their valuation, although the present value is esteemed greater than the charge. Should it be thought otherwise, however, there is an ample surplus, netting \$3,755,342, from which to adjust them. The officers of the company expended in improving their railroad connections and in enlarging their coal estate, in the four years from 1868 to 1871, both inclusive, a period of the company's lowest credit, \$9,000,000. The company proposes to sell two millions more of bonds, which will raise the total funded debt to \$13,000,000, secured by a mortgage on a property estimated worth \$25,000,000. The prospects of the traffic of the company are flatteringly presented, and warrant the hope that the shareholders will, ere long, be in regular receipt of their usual dividends.

Patent Lubricators.

Messrs. Nathan & Dreyfus call attention to the following extract from the *English Mechanics Magazine*: "But in lieu of a wire or needle being placed in the tube, which, by its continued friction, ultimately cuts a groove in the shafts on which it rubs," etc. In regard to this, Messrs. Nathan & Dreyfus say:

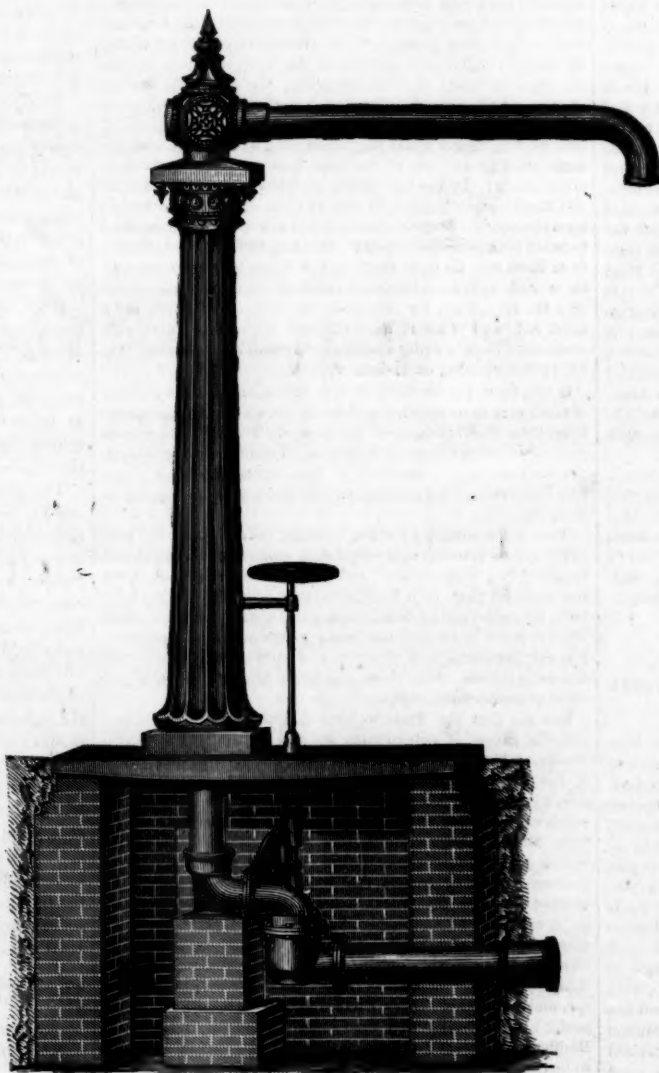
"The above statement is entirely contrary to the facts, as we now have been making and selling the wire or needle oil cup for the past six years, and in no case has the wire ever worn the slightest groove in the shaft upon which the Dreyfus' oil cup has been applied. Thousands of our cups are in use upon the connecting rods of locomotive engines in the United States and elsewhere, where the motion is much greater than on an ordinary revolving shaft, yet none have ever worn the slightest."

Contributions.

Various Subjects—Where Are the Railroad Torpedoes?—Derailment of Trains—Effect of Age on Steam Boilers.

One of the neatest and most effective little arrangements ever invented for convenience and safety in railroad operations is the "torpedo," or alarm signals. This little affair consists of a tin box about the size and shape of the smallest sized blacking-boxes. The box is filled with an explosive compound, and two strips of tin are soldered to two opposite sides of the box perpendicular to its sides or edges for fastening it to the rail. These boxes explode on the principle of the percussion cap, with a loud report. They are in use on some roads for night signals and in foggy weather, when lights or flags would not be seen in time to prevent accident. Track-men are provided with these torpedoes, and in case of danger they are placed on the rail, far enough from the place of danger to prevent disaster. Usually three of them are placed a few feet apart, to insure their being heard by the engineer. They are reliable, and will explode at the touch of the wheel at the slowest speed.

It is said that the Reading company uses 35,000 of these tor-



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pedoes per annum, on the roads which it operates. This is a good showing in favor of the contrivance, and doubtless many serious accidents are prevented by their use. They cost but a trifle, and considering the time they have been in use (the writer used them 20 years ago), it is singular that they are not more generally used.

They would be especially valuable at this time of the year, when bridges, culverts and embankments are suddenly undermined or washed away, or rocks and earth are suddenly precipitated upon the track by the action of frost and the spring rains.

Every track-man should be provided with the torpedoes, and they are equally valuable for train-men to use in case of accident, to prevent other trains running into the wrecked train, which frequently happens. Some genius might do a good thing by contriving a plan by which a torpedo could be placed on the rail at draw-bridges and switches in case of misplacement. This could be accomplished by attaching suitable mechanism to the draw or switch for actuating a wire or rod, the length of which should be sufficient to give time to stop without danger. When the draw or switch is replaced, the torpedo could be removed by the reverse action of the mechanism as the draw comes back to place. The principal objection to contrivances of this kind is that they are easily tampered with by evil-disposed persons. This, however, should not be regarded as a serious objection, for a person bent on the destruction of a train will accomplish it in some way or other, and this torpedo signal can be so arranged that any meddling with it could be detected at once.

Manufacturers of the railroad torpedo would serve their interest and benefit the public by advertising. The numerous accidents occurring in various parts of the country which could have been prevented by the use of the torpedo leads to the conclusion that they are not so generally used as they should be.

DERAILMENT OF TRAINS.

It not unfrequently happens that trains leave the track without any apparent cause. When a train leaves the track and is badly wrecked, it is sometimes difficult to determine whether it was caused by a broken wheel or axle, if they are to be found among the ruins. It is frequently the case that the broken wheels and axles, and sometimes broken rails, are the result of a run-off rather than the cause.

There are many well-known causes of derailment, and these are so prevalent on some roads that it is a wonder that accidents are not more frequent than they are. With track badly out of surface and line, the rails broomed at the joints and flattened in spots and spread to twice their original width, thereby reducing the gauge, and with locomotive flanges worn to knife edges, there is not much difficulty in accounting for a train leaving the track. But when the permanent way is in good condition, wheel flanges in good shape and rolling stock in good condition generally, and nothing breaks to cause a run-off, an accident of that kind may be considered mysterious.

Fast trains are less liable to mysterious derailment than slow ones. It requires considerable nerve to make this assertion in the face of the prevailing opinion to the contrary; but when it is understood that the assertion is qualified by the word "mysterious," there is nothing to fear. When the locomotive is drawing the train there is little danger of any part of the train leaving the track. This is on the supposition that track and rolling stock are all in good condition. In running down grade on a curve, if the locomotive is holding the train, it is far more likely to leave the track than if running at a high velocity, with no "slack" on the train.

If the back drivers are the first to leave the track (and they usually are in such cases), it may be regarded as conclusive evidence that the derailment was caused by the tendency of the train to run on a tangent which forced the flanges of the driving wheels against the outer rail with great power, causing them to "mount." Or if a car near the middle of the train be checked with the brakes on a descending grade and curve sufficiently to cause all the rear cars to rush against that car with great force, it is very likely to cause a mysterious derailment of the checked cars. Other cars may be thrown from the track as they are forced against and by the assistance of the first-mentioned cars. This may result in the general ruin of all the cars in the rear of the suddenly checked car. If the locomotive and that portion of the train ahead of any sudden and forcibly checked car are not so far checked but that they exert a pulling force on the checked cars, the rear truck of that car will leave the track if any does. Thus the driving wheels of a locomotive, or the rear truck of any car in a train, may be thrown from the track by the force of the rear portion of the train rushing against it. This is very likely to occur when everything is in good order and no outward appearance would indicate danger; but it would of course more frequently happen if track and rolling stock were in bad condition. Of course it will be understood that the foregoing remarks have reference only to trains running on curves with a down grade. But even fast trains are less likely to derailment than slow ones, with the exception that they are more liable to breakage. The impinging of the wheel flanges of a fast train against the rail is attended with a powerful reaction, which prevents the "mounting" so common with slow trains. Everything else being equal, fast trains may be considered safer in this respect than slow ones.

THE EFFECTS OF AGE UPON STEAM BOILERS.

Although this subject has been pretty thoroughly and ably treated, it is by no means exhausted. Holding as it does a prominent place among the numerous causes of boiler explosions, any reliable information that may be gained on the subject will be gladly received by the engineering profession throughout the world. Notwithstanding many elaborate experiments have been made which prove beyond a doubt that boiler iron deteriorates with age and long-continued use, there are not a few who claim to have substantial proof to the contrary. Indeed, those who claim that age does not injure the quality of boiler iron have, on some occasions, found that boilers remain uninjured to a remarkable age. More light is wanted on this subject, and it is a matter in which every one is interested, and more accurate knowledge is needed than has thus far been gained by any experiments yet made public. Those who have published the conclusions arrived at from their experiments are so much at variance as to leave the public very much as "Josh Billings" has it: "First, those who know it to be so; second, those who know it ain't so, and, third, those who split the difference and guess at it; fourth, those who don't care how it is."

Mr. Peter Carmichael gives us some valuable information on this subject. He says that two cylindrical double-flued or Manchester boilers made steam at Dens' Works, Dundee, for nineteen years. In June, 1867, certain repairs had to be effected in these boilers, and Mr. Carmichael found that the plates had become very brittle. The boilers were made by Messrs. Carmichael & Co., Ward Foundry, Dundee, and to them Mr. Peter

Carmichael wrote. He received a reply to the effect that from experience the firm found that all qualities of iron get hard and brittle after the boilers have been at work more than a dozen years, more especially where exposed to the action of the fire; and that in the furnaces, even Low Moor or Bowling iron becomes as brittle as common iron in that time, and great care has to be taken in making repairs, to prevent the plates from cracking. [The italics are mine.] For this reason they thought sixteen or seventeen years a long enough period for a boiler to be in use at a pressure of 40 lbs. to 45 lbs. If used for a longer period the pressure should be lowered. * * * The fact of the iron getting hard and brittle after being in use for a length of time has often been pointed out to us by our boiler-maker of late; and, in consequence, we generally recommend that, in cases of high pressure boilers, the pressure be lowered or new boilers be introduced after they have been working from sixteen to seventeen years.

These two boilers were tested to destruction by Mr. Carmichael with a view to ascertain, if possible, the effect of age by actual test. These tests lead him to conclude that "old boilers apparently strong and sound give way sometimes without the slightest previous warning, simply because of the deterioration of the iron by use; a deterioration, we may add, the occurrence of which has been flatly denied by many engineers in the face of a host of facts to the contrary. It also shows that it is not prudent to accept the rules commonly laid down as to the strength of boilers without qualification. According to Fairbairn's, the bursting pressure of these boilers was about 300 lbs. on the square inch. Yet they failed with one-third of this pressure. * * * Mr. Carmichael read a part of a report from the boiler makers who broke the boilers up. So brittle were they that it was found almost impossible to get some sound test strips which were sent to Mr. Kirkaldy. The rivet heads flew off when the inside heads were struck with the hammer and set, so that the material of the rivets had deteriorated as much as the plates.* As to the original strength of the plates, Mr. Kirkaldy gives as follows: Glasgow best boiler plate drawn in direction of fibre, 24.04 tons; do. across, 21.8 tons; Glasgow best scrap plate, 22.8 tons; mean, 22.92 tons. The test strips cut from Mr. Carmichael's boilers gave the following results: shell plates direction of fibre, 19.7 tons; do. across, 19.2 tons; furnace plate, direction of fibre, 17.1 tons; do. across, 15.3 tons; mean, 16.2 tons. It will thus be seen that, according to this report of testing, compared with Mr. Kirkaldy's table, while the shell plates have deteriorated or weakened from 22.92 tons to 19.45 tons, the furnace plates are decreased in strength from 22.7 tons to 16.2 tons.

Tests similar to the above have been made, and with similar results; and it would seem to be conclusive evidence that boiler material decreases in strength by age; but, on the other hand, when a boiler 28 years old is cut into strips and found equal to the best new boiler plate, what shall we say? Such a case is reported, and other similar reports are entitled to credence.

WM. S. HUNTINGTON.

* These plates had not deteriorated in thickness.

[TO BE CONTINUED.]

Relative Cost of Wide and Narrow-Gauge Railroads.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I will answer your questions, remarking first that I have stated in my first letter and article in *Van Nostrand's Eclectic Engineering Magazine* that as long as the wide-gauge companies stick obstinately to their width of road-bed, 14 feet for embankments and 18 feet for excavations, to their heavy and costly rails and stock, and do not show any disposition to reform them, on account, I suppose, of the reasons I have previously stated, the advocates of the narrow gauge have a perfect right to compare what exists actually on wide-gauge roads with what exists on narrow-gauge roads. This I have done at length in my article in *Van Nostrand's Magazine*, and I need not repeat it. It won't do, in defense of the wide gauge, to compare what might exist on it, if a reform was made, with what exists on the narrow-gauge roads, where the reform has been made. It would be time enough to make that comparison when some wide-gauge companies shall have been organized with a light stock. You want me to compare what might exist on a wide gauge with what exists on the narrow gauge.

If you and I had to build, on an equal surface of ground, two houses for two different families equal in number and with the condition that one family will be as comfortably lodged as the other, and if you prefer to build your house with expensive granite stone and considerably solidier than necessary, when I can build a frame house which will answer the purpose and at considerably reduced cost, there is no reason why I should imitate you; and if the people, remarking that the comfort is the same in both houses, would give the preference to mine because it has cost less, I do not think you would be justified in saying that you might have built a house as good and as cheap as mine if you had only built it with frame work instead of granite, and still less justified to ask people to make a comparative estimate of the house you might have built with the one I have really built. I will, however, suppose for a moment that the reform in road-bed, rails and stock has been made on some wide-gauge road—which is not the case—and declare frankly that if such was the case, the wide-gauge company would have achieved a very great improvement, and that the advantages that would be gained by it would be nearer those obtained on the narrow gauge.

Cars of the same dimensions as those running on the Denver & Rio Grande Railway (3 feet gauge) could be built for a 4 ft. 8 in. gauge, the axles and brake beams being only a little longer, and I do not think that the difference in the weight of the two cars would be over 80 pounds. This I have fully stated before in my article in *Van Nostrand's Magazine*. The price of the cars would be consequently very nearly the same, if not the same. The price of rails would be also the same.

The advantages of the narrow gauge over the wide

gauge would be, in this case, merely confined to an economy in the width of the road-bed in clearing and grubbing, in hauling, in construction of drain boxes, bridges and culverts, in saving of cuttings round the points of the hills, saving of tunnels and facility of having easier grades. The advantage of one gauge above the other, as regards the stock, would materially disappear. The economy in the width of the road-bed would be thus due to a contraction of 1 ft. 8 in. For banks 6 feet high, slopes $1\frac{1}{2}$ to 1, banks 10 feet wide for the 3 feet gauge and 1 ft. 8 in. wide for the wide gauge, the difference in the section of the two prisms would be only 10.24 sq. ft., or about 6 per cent. of the section of the narrow-gauge prism. However small would be this economy, it would nevertheless exist. There will be also an economy in hauling. This in the clearing and grubbing will be equal to $2\frac{1}{2}$ per cent. of the cost of clearing on narrow gauge. This on the length of the drain boxes would be equal to 6 per cent. of their cost on narrow gauge. This in the reduced width of the bridges and culverts would be equal to 12 per cent. of their cost on narrow gauge. The economy in cuttings and saving of tunnels by using sharp curves would be also notable and all those different economies added together and repeated per mile would form very respectable sums, which the advocates of the wide gauge ought not to overlook, and which establish plainly the advantage of narrow gauge. And now please tell me why a wide gauge company, having laid a light rail and built a light stock running on 24 in. wheels should not reduce the gauge to 3 feet and profit by all the economy above spoken of, when it could do it in all safety, the center of gravity of the small cars running on 24-inch wheels, being so much lower than those of the old-fashioned car, running on 33-inch wheels, that it could run them on a 3 feet gauge with the same stability as that of the cars generally run on 4 ft. 8 in. gauge roads? By the fact that it has light rails and light stock and that it cannot couple its cars to those of other connecting lines running on 33-inch wheels, is not that company compelled to break bulk with those lines? Is it not, in fact, more isolated from them with its light stock than if it had broken gauge with them and built a heavier stock running on 33-inch wheels and on a 4 ft. 4 in. gauge, for example? In this case it could lay a third rail, and without inconvenience interchange cars with connecting lines, a thing absolutely impossible when it has that light stock running on 24-inch wheels.

Is not, then, the breaking of the draw-head and the liability of small cars to be crushed by heavier ones a greater inconvenience than the breaking of the gauge? I would like you to give me an answer to these questions. I cannot see any reason, where a company is compelled to break bulk with other lines, why it should not reduce its gauge, if there is any economy in doing it.

What is the advantage of not breaking gauge? Is it not precisely this of interchanging cars with connecting lines, of not breaking bulk with them? And when a company, for realizing the economy there is in building a light stock and using light rails, is compelled to break bulk with connecting lines, what interest has it in keeping the same gauge as those lines, when it is not beneficial to it in any way, if those companies do not choose to reform their stock, and when that gauge is to it a cause of unnecessary expense?

You say that the Toronto, Grey & Bruce Railway Company (3 ft. 6 in. gauge) is now running its cars on a third rail laid on the Grand Trunk road (5 ft. 6 in.). Then, if it is so, the wheels of the Toronto, Grey & Bruce cars must be 33 inches in diameter, like those of the Grand Trunk, to allow the coupling, in which case the cars of the Toronto, Grey & Bruce weigh each from 900 to 1,000 lbs. more than those running with 24 in. wheels on the 3-feet gauge of the Denver & Rio Grande; or if they are only 24 in. wheels the bodies of their cars must be blocked up above the trucks to allow the draw-heads to meet, an operation long and expensive for a whole train, and still more expensive for several trains running every day. That blocking up, if it exists, is in my opinion a bad thing. It adds materially to the dead weight of the car, and in raising its body diminishes its stability. I would prefer to break bulk rather than to have cars built up that way. Besides, this does not prove that their light cars are not exposed to be crushed by the heavier ones of the Grand Trunk, and I am afraid they will have reason to repent of the experiment. There exists, in my opinion, the greatest danger in coupling light cars with heavy ones.

One word now about the resistance on curves. It is greater on wide gauge than on narrow gauge, as I said before, on account of the wheels being fixed on the shafts, and of the greater length of the outside rail of the wide gauge in comparison with the outside one of the narrow gauge. I have, in my article in *Van Nostrand's Magazine*, given the formulae to estimate it, with coefficients resulting from experiments, and by using those formulae you can find yourself the difference of resistance on both gauges. I concede that if the outside wheel in entering a curve could get loose on the shaft, and thus turn all the time on the rail instead of sliding on it, there would be no difference in the resistance on the two gauges; but this improvement, which has been suggested before, is very difficult to apply, and as long as the wheels rest fixed on the shaft, the advantage rests in favor of the narrow gauge, not only for a smaller resistance on the curves, but also for the facility in locating the road with sharper curves, saving an expense in the cutting round the points of the hills, saving tunnels, and allowing easier grades, by lengthening the road. I repeat it again, if you want to build a light stock you have no reason and no advantage whatever in keeping the wide gauge, and you could build the road more economically with the narrow gauge.

I have had, to answer your questions, to repeat partly what I had written before. I think I have said all that I know about this question, and now that my object has been attained in exposing fully my views, I am desirous to let the matter drop, because I don't think I could answer any more questions without repeating again what I have said, and it would be a loss of time

and wearisome. If, however, you put some questions to which I have not already answered, I will try to answer them.

CH. J. QUETIL.

[Mr. Quetil has not yet done what we have requested him to do, which is to estimate carefully—that is, item by item, in parallel columns—the cost of a narrow and a wide-gauge road intended to do the same business and in the same way in each case. If he did do this, he would discover the error—if he has not already done so—which he and other advocates of the narrow gauge have fallen into in regard to the relative cost of wide and narrow-gauge roads. The question at issue is not, as he assumes to think it is, whether a light narrow-gauge road will cost less than one with a heavy equipment and a wide gauge; but it is—and we want to state this as distinctly as the English language will enable us—the relative cost of two lines to do the same business at the same speed, under the same circumstances, and to furnish the same facilities for the traffic in each case. It seems as though a surgical operation would be necessary to introduce this idea into the minds of some persons who have become enamored of the narrow gauge. It is utterly folly and absurdity to compare the cost of a narrow-gauge road with light stock and equipment, with that of a wide-gauge road and heavy equipment, and draw inferences therefrom regarding the difference in cost which is due to the gauge.]

Mr. Quetil admits that the difference in weight in cars of the same kind for the two gauges would be only about eighty pounds, and that the saving in the cost of grading would be only 6 per cent. with the same alignment, but claims some vague advantage for the narrow gauge, because shorter curves can be used on it than on a wide gauge. Now, will he not assign an exact value to each of these, and all the other items in the cost of two roads of the same kind?

If Mr. Quetil claims that light roads for light traffic are more economical than heavy ones, we have no word of dissent. This error, we conceive, is the at least implied assumption that this lightness and consequently the economy is due to the gauge, which we deny as explicitly as these words will permit; and if he can frame any others which will make the denial more distinct and emphatic, he is at liberty to do so.

The question which he and General Buel discussed and tried to establish was, that the cost of the Texas Pacific Railroad, if it was made of 3 ft. 6 in. gauge, would be very much less than if it was made of the ordinary 4 ft. 8 in. gauge. Now after so much discussion to prove that "the money required to complete the superstructure and equip 50 miles of railroad 4 ft. 8 in. gauge will complete and equip 74 miles of railroad 3 ft. 6 in. gauge," does it not seem very much like a retraction on the part of these gentlemen for Mr. Quetil to say, as he does above, that if a light construction were adopted "the advantages that would be gained by it would be nearer those obtained on a narrow gauge." If he will have the kindness to estimate how near, we believe that both he and General Buel will be forced to conclude that it will be less than 5 per cent., and therefore they will have reached the same conclusion which we have, and the discussion will thus be ended. We must, however, beg these gentlemen to face the figures as courageously as they have encountered some other things which required more bravery.—EDITOR RAILROAD GAZETTE.]

THE WESTERN AND SOUTHERN RAILWAY ASSOCIATION.

Report of the Quarterly Meeting in Atlanta, April 10 and 11.

The first quarterly meeting of the Western and Southern Railway Association, appointed to be held in Atlanta, Ga., April 9, on account of the non-arrival of delegates was postponed until the 10th, when there were present the following delegates:

Thomas Allen, St. Louis & Iron Mountain; W. R. Arthur, St. Louis, Kansas City & Northern; J. C. McMullin, Chicago & Alton; Albert Fink, Louisville & Nashville; L. J. Fleming, Mobile & Ohio; E. G. Barney, Selma, Rome & Dalton; J. F. Boyd, St. Louis & Southeastern; A. W. Soper, St. Louis & Iron Mountain; A. Mitchell, Illinois Central; J. E. Simpson, St. Louis, Vandalia, Terre Haute & Indianapolis; E. W. Cole, Nashville & Northwestern, Nashville & Chattanooga, and Western & Atlantic; O. Chanute, Leavenworth, Lawrence & Galveston.

And the following new members:

Horace Scott, Jeffersonville, Madison & Indianapolis; Jos. E. Brown, Western & Atlantic; J. H. Hammond, Macon & Brunswick and Montgomery & Eufrata; G. J. Foreacre, Western Railroad of Alabama; L. P. Grant, Atlanta & West Point; B. Dunham, Montgomery & Eufrata; W. L. Clark, Mobile & Girard; Henry Fink, Atlantic, Mississippi & Ohio; A. J. White, Macon & Western.

The following is the official report, with slight changes in the arrangement:

The meeting was called to order at 4 p. m., the President, Mr. Thomas Allen, in the chair.

The President read a communication from Mr. J. H. Sheldon, Secretary of the Association, stating that he would be unable to be present at the meeting. Mr. O. Chanute was appointed Secretary pro tem.

The Secretary read a list of the members who had joined the Association up to the present time.

The reading of the minutes of the previous meeting was dispensed with.

Reports were then received and read from various committees, as follows:

1. From the Committee "upon some plan for abolishing

of regulating the practice of paying commissions on the sale of tickets."

COMMISSIONS ON TICKET SALES.

The Committee respectfully report: That in their opinion commissions should be wholly abolished; but that nothing short of general and concerted action on the part of all the roads of the country will be effective to that end.

So long as the practice is continued, it would appear that the best way to regulate it, is for the General Ticket Agents' conventions to agree upon a uniform rate to be paid by all lines, *pro rata*, between competing points.

As all money so paid is thrown away, and of no practical use whatever to the railroad companies, it is recommended that the Association appoint a committee to confer with the companies not represented in the convention, and especially with the great trunk lines, and endeavor to secure the needed concert of action to abolish such payments entirely.

A. ANDERSON,
A. W. SOPER,
A. A. TALMAGE, } Committee.

On motion of Mr. L. J. Fleming, the report was adopted as the sense of this meeting, and it was resolved that the present committee be continued, and appointed to carry out the recommendations of their report.

2. The Committee "upon the best means of bringing about the total abolishment of the pass system," reported progress, and asked for further time.

There being no objection, this was granted.

3. The Committee "to draft rules to govern railroads in the interchange of cars, and proper charges for them, including the repairs of foreign cars," not being present, and the report, which it was understood they had prepared, having failed to come to hand, the Executive Committee appointed Mr. Albert Fink, Mr. J. E. Simpson and Mr. Horace Scott, a special committee to report on this subject the next day (April 11), at 10 a. m.

4. The Committee "upon the best methods of securing the maintenance of agreed rates of contracts," asked for more time, which was granted. Messrs. E. W. Cole and J. F. Boyd were appointed a new committee to report on the subject.

5. The report of the Committee "upon regulations affecting the employment of persons discharged by other lines" not having been received, Messrs. Albert Fink, A. Mitchell and J. F. Boyd, were appointed a new committee to report on this subject.

6. The report of the Committee "upon the question of the responsibility of railroad companies for injuries to employees and others," was read by the Secretary.

This report was long and elaborate, and contained much valuable information, and references to recent legal decisions.

After an extended discussion, which developed some differences of opinion as to the legal positions discussed, the report was received, laid on the table, and the committee discharged.

The Committee "upon the best methods of guarding against accidents," stated that in consequence of the absence of the chairman, they would be unable to report before the next day morning.

NEW BUSINESS.

Mr. L. J. Fleming gave notice that he would, on the next day, introduce a resolution concerning passenger car platforms and brakes.

On motion of Mr. J. C. McMullin, the Executive Committee were given until the morrow (April 11) to prepare business to be acted upon by the meeting.

Upon some remarks by Mr. Albert Fink, upon questions connected with sleeping cars, the Executive Committee appointed Messrs. Albert Fink, A. Mitchell and J. E. Brown, a committee to report "upon the subject of sleeping-car contracts, interchange and repairs of sleeping cars, and compensation for hauling them."

On motion of Mr. Simpson, Messrs. J. E. Simpson, L. J. Fleming and O. Chanute were appointed a committee to select the place for the next quarterly meeting, with instructions to report on the next day.

Mr. J. E. Simpson suggested that the subject of train-dispatching be reported upon at the next meeting, with a view to the adoption of a uniform system.

On motion of Mr. A. W. Soper, a committee was appointed to report, on the next day, "upon the question of adopting a uniform system of national time for time-tables."

Messrs. A. Mitchell, E. G. Barney and J. F. Boyd were appointed as such committee.

On motion of Mr. A. W. Soper, the meeting adjourned, to meet the next day at 10 a. m.

SECOND DAY'S PROCEEDINGS.

The meeting was called to order by the President of the Association at 11:30 a. m.

The report of the Committee "to draft rules to govern railroads in the interchange of cars, and proper charges for them, including the repairs of foreign cars," was received and read.

Its provisions were discussed by the members of the Association present, and on motion of Mr. L. J. Fleming, it was amended in regard to its proposed rules concerning the furnishing of new brasses for freight cars.

On motion of Mr. J. E. Simpson, the amended report was adopted as the sense of this meeting, its provisions to go into effect May 1, 1873, Mr. A. W. Soper, dissenting. The following is the result:

1. Each road should keep a car inspector, at all transfer or junction stations, and reject all cars offered that are not in safe running order.

2. If cars are out of repair, but still in safe running condition, and loaded with freight that should not be transferred, they may be received, after being marked and noted by the inspector, in such a manner that the car may be received back in the same condition, ordinary wear and tear excepted.

3. When foreign cars are broken, they shall be made good by the road on which they are broken, except as hereinafter provided.

4. The road breaking the car to have the option of repairing it, or allowing the road owning the car to repair the same at their expense, it being understood that they shall make the car as good as when they received it, ordinary wear and tear excepted.

5. When a car is broken so as to require a new body, the road on which the accident occurs will settle with the owner of the car, by paying the value of the same, at the time the accident occurred, or if requested by the owner thereof to rebuild the car, shall do so, the owner paying the difference in value between the new and the old.

6. In case of breakage of wheels or axles, or renewals of brasses in ordinary usage, the party owning the car will furnish the necessary wheels, axles and brasses, to replace those broken or worn out, without charge: But the road on which the damage occurs will furnish the labor, and make the other repairs incident to such breakage.

7. In case new brasses are furnished by the company on which it becomes necessary to renew them, they shall be charged by the company putting them in at 35 cents per pound, and the old brasses shall be credited at half price.

8. In the absence of specific arrangements, a charge of 14 cents per mile each way, both loaded and empty, is recommended as the proper mileage charge for freight cars running on foreign roads.

9. The adoption of these rules by the Association is understood as not interfering with special contracts.

ALBERT FINK,
JOHN E. SIMPSON,
HORACE SCOTT, } Committee.

The report of the Committee "upon the best methods of securing the maintenance of agreed rates and contracts," was received and read, and on motion of Mr. J. E. Simpson, adopted.

It recommends: 1. That all agreements concerning rates shall hereafter be in writing. 2. That they shall be made full and explicit, so as to leave no doubt as to the meaning of their provisions. 3. That they shall contain clauses for the relief of such cases of hardship to any of the parties, as may arise by reason of varying circumstances. And, 4. That any member of the Association deeming itself aggrieved, may have a right of appeal to a Board of Arbitration, to be appointed by the Executive Committee.

The report of the Committee "on regulations affecting the employment of persons discharged by other lines," was received and read.

The question was debated at length, nearly every member present taking part in the discussion.

A communication from Mr. Charles Wilson, of Cleveland, Ohio, was received and read.

On motion of Mr. J. C. McMullin, the whole question was laid on the table.

The report of the Committee "upon the question of sleeping car contracts, &c.," was received and read.

The various questions raised in the report were debated at considerable length, and many managers gave statistics of the cost of running and repairs upon sleeping cars over their lines.

On motion of Mr. Jos. E. Brown, the subject was postponed till the next meeting.

The report of the Committee "upon the best methods of guarding against accidents," was received and read.

Its recommendation that the Executive Committee take steps to codify a general system of rules to govern railroads in their adoption of signals, in moving trains by telegraph, in the precedence and rights of trains, and in the government of employees, was concurred in.

On motion of Mr. L. J. Fleming, the following resolutions were adopted:

Resolved, That the experience of the railroads in this country justifies this Association in recommending the adoption of such brakes upon engines and cars of passenger trains as can be operated by the engineer of the train; and the use of platforms on passenger and baggage cars level with the floor of these cars, to prevent telescoping in case of accidents.

Resolved, That this Association recommends to the manufacturers of automatic brakes that they adopt such connections and interchangeable parts for their machinery as shall permit cars variously equipped and used by different companies to be made up and used in the same train.

On motion, meeting adjourned to 4 p. m.

At 4 p. m., the Association having accepted the invitation of Messrs. O. H. Jones & Co. to ride out to view the city of Atlanta, a further adjournment was made to 7:30 p. m.

The meeting was called to order by the President at 7:30 p. m.

The report of the Committee "upon the question of adopting a uniform system of national time for time-tables," was received, read and discussed.

The recommendation that the system devised by Mr. Chas. F. Dowd, of Saratoga, New York, be adopted, with some proposed modifications, seemed to meet with general favor. It was believed that with concert of action, and the perfecting of its details, the plan would come into general use in a short time.

On motion of Mr. J. C. McMullin, the report was referred to a committee consisting of Messrs. Robert Harris, E. G. Barney and J. F. Boyd, with instructions to confer with the New England Railway Association, and with other railroads, and to report at the next quarterly meeting.

The committee appointed to select a place for the next meeting, reported that they had selected Cleveland, Ohio, and that the time fixed by the constitution would fall upon Tuesday, July 9.

This selection was approved by the meeting.

A resolution was offered, indorsing the *Traveler's Official Guide* as the organ for the publication of the time-tables of the roads represented, which elicited an extended discussion. The general sense of the meeting was that, while this guide was the most reliable and complete now published, the Association should not be placed in the condition of recommending or indorsing any particular person's publications or devices, and the resolution was accordingly voted down.

The following resolution was offered by Mr. J. C. McMullin, and unanimously adopted:

Resolved, That the President be authorized to select and appoint a paid Corresponding Secretary, to collect information and statistics for the use of the Association; to attend all the sessions, and during recesses of the same to become a medium of communication between the members of the various committees, and to attend to any other duties the Association or the President may assign to him.

On motion of Mr. J. E. Simpson, the following resolutions were adopted:

Resolved, That the Secretary be requested to notify all the presidents, superintendents and other managing officers of railroads in the South and West, of the next meeting of the Association at Cleveland, and to invite all those who are not already members to join this Association.

Resolved, That the Secretary be instructed to have the proceedings of this meeting printed, together with such papers and reports as may be deemed advisable, under the directions of the President, and to send a copy of the same to each of the presidents, superintendents and other managing officers of all railroads in the United States; and that the costs be divided *pro rata* among the roads now represented in the Association.

Invitations were received from a committee of citizens of Atlanta, requesting the members of the Western and Southern Railway Association to attend a collation and entertainment to be given in their honor, that evening, at the H. I. Kimball House, and accepted with thanks. Resolutions were adopted, thanking the proprietors of the H. I. Kimball House, and Messrs. O. H. Jones & Co., for courtesies received and attention shown to the members of the Association.

After passing a vote of thanks to the President and Secretary, the Association adjourned, to meet at the Kennard House, Cleveland, Ohio, on Tuesday, July 9, 1873.

The Executive Committee announced the following special committees, to report at the next meeting:

1. To carry out the Plan for Abolishing the Practice of Paying Commissions on the Sale of Tickets.—A. Anderson, Vice-President Toledo, Wabash & Western Railway; A. W. Soper, General Superintendent St. Louis & Iron Mountain Railroad; A. A. Talmage, General Superintendent Missouri Pacific Railroad and Atlantic & Pacific Railroad.

2. On the Best Means of Bringing about the Total Abolishment of the Pass System.—J. E. Simpson, General Superintendent Vandalia Line; E. D. Frost, General Superintendent New Orleans, Jackson & Great Northern Railroad, and Mississippi Central Railroad; Geo. H. Nettleton, General Superintendent Hannibal & St. Joseph Railroad.

3. Upon the Question of Adopting a Uniform System of National Time for Time Tables.—Robert Harris, General Superintendent Chicago, Burlington & Quincy Railroad; E. G. Barney, General Superintendent Selma, Rome & Dalton Railroad; J. F. Boyd, General Superintendent St. Louis & Southeastern Railway.

4. On the Relations of Railways to Telegraph Companies, and the Rules and Precedence which should govern their Business.—E. G. Barney, General Superintendent Selma, Rome & Dalton Railroad; E. W. Cole, President Nashville & Northwestern, and

General Superintendent Nashville & Chattanooga and Western & Atlantic Railroads; R. S. Stevens, General Manager Missouri, Kansas & Texas Railway.

5. On the Relations of Railways to Express Freight Lines, and their Management.—Jos. E. Brown, President Western & Atlantic Railroad, of Ga.; A. Anderson, Vice-President Toledo, Wabash & Western Railway; Horace Scott, General Superintendent Jeffersonville, Madison & Indianapolis Railroad.

6. On Sleeping-Car Contracts, and Repairs of such Cars.—M. Hughtitt, General Superintendent Chicago & Northwestern Railway; L. P. Grant, General Superintendent Atlanta & West Point Railroad; A. Mitchell, General Superintendent Illinois Central Railroad.

7. On Rules to Govern the Interchange and Mileage of Sleeping Cars, Passenger Coaches and Baggage Cars.—J. C. McMullin, General Superintendent Chicago & Alton Railroad; Albert Fink, Vice-President and General Superintendent Louisville & Nashville Railroad; W. R. Arthur, General Superintendent St. Louis, Kansas City & Northern Railway.

8. On the Adoption of the Best System of Dispatching Trains by Telegraph.—A. A. Talmage, General Superintendent Missouri Pacific Railroad and Atlantic & Pacific Railroad; J. H. Sheldon, General Superintendent Gilman, Clinton & Springfield Railroad; Wm. Rogers, General Superintendent Georgia Central Railroad.

9. On the Best Methods of Heating and Lighting Cars.—O. Chanute, General Superintendent Leavenworth, Lawrence & Galveston Railroad; A. W. Soper, General Superintendent St. Louis & Iron Mountain Railroad; W. E. Muir, General Superintendent Great Western Railway of Canada.

10. Upon the Wear and Tear and Durability of Wheels and Axles, and how many Miles they can be Run with Safety on Passenger and on Freight Trains.—C. E. Paine, General Superintendent Lake Shore & Michigan Southern Railway; E. G. Barney, General Superintendent Selma, Rome & Dalton Railroad; Horace Scott, General Superintendent Jeffersonville, Madison & Indianapolis Railroad.

11. On the Proper Rules and Charges to be Adopted for Demurrage in the Interchange of Freight Cars, and Delays in their Return. How shall these Charges be Apportioned when Foreign Cars Run over several Connecting Lines?—W. R. Arthur, General Superintendent St. Louis, Kansas City & Northern Railway; E. W. Cole, President Nashville & Northwestern, and General Superintendent Nashville & Chattanooga Railroad and Western & Atlantic Railroad; A. N. Chrystie, General Superintendent Ohio & Mississippi Railway.

12. Upon the Importance and Feasibility of Adopting a Uniform Height of Bunker for all Railroad Cars hereafter to be Constructed.—Henry Fink, General Superintendent Atlantic, Mississippi & Ohio Railroad; G. J. Foreacre, General Superintendent Western Railroad of Alabama; J. E. Simpson, General Superintendent Vandalia Line.

LIST OF MEMBERS OF THE WESTERN AND SOUTHERN RAILWAY ASSOCIATION.

Geo. H. Nettleton, General Superintendent Hannibal & St. Joseph Railroad; L. J. Fleming, Chief Engineer and General Superintendent Mobile & Ohio Railroad; O. Chanute, Chief Engineer and General Superintendent Leavenworth, Lawrence & Galveston Railroad; R. S. Stevens, General Manager Missouri, Kansas & Texas Railroad; L. Burnet, General Superintendent Sioux City & Pacific Railroad; A. A. Talmage, General Superintendent Missouri Pacific and Atlantic & Pacific Railroads; W. R. Arthur, General Superintendent St. Louis, Kansas City & Northern Railway; J. C. McMullin, General Superintendent Chicago & Alton Railroad; John E. Simpson, General Superintendent St. Louis, Vandalia, Terre Haute & Indianapolis Railroad; A. Mitchell, General Superintendent Illinois Central Railroad; E. G. Barney, General Superintendent Selma, Rome & Dalton Railroad; J. F. Boyd, General Superintendent St. Louis & Southeastern Railway; Silas Adair, General Superintendent Grand Tower & Carbondale Railroad; W. H. Greenwood, General Superintendent Denver & Rio Grande Railroad; F. H. Firth, General Superintendent Atchison & Nebraska Railroad; W. F. Downs, General Superintendent Central Branch Union Pacific Railroad; A. Anderson, Vice President Toledo, Wabash & Western Railway; A. W. Soper, General Superintendent St. Louis & Iron Mountain Railroad; Thos. Allen, President St. Louis & Iron Mountain Railroad; J. H. Sheldon, General Superintendent Gilman, Clinton & Springfield Railroad; E. G. Dawes, General Superintendent Loganport, Crawfordville & Southwestern Railway; J. E. Barnard, General Superintendent St. Joseph & Denver City Railroad; J. C. Hepburn, General Superintendent Oil Creek & Allegheny River Railroad; George Greene, President Burlington, Cedar Rapids & Minnesota Railroad; A. H. Reese, General Superintendent Detroit, Lansing & Lake Michigan Railroad; Wm. Greene, General Superintendent Burlington, Cedar Rapids & Minnesota Railroad; Silas N. Martin, President Wilmington, Charlotte & Rutherford Railroad; Thomas H. Wynne, President Richmond & Petersburg Railroad; S. W. Dorsey, President Arkansas Central Railroad; Jno. M. Webster, Vice President Arkansas Central Railroad; J. E. Gregg, Superintendent Arkansas Central Railroad; W. Wallace, Assistant Superintendent Great Western of Canada; Hugh Pictain, General Superintendent Evansville, Henderson & Nashville Railroad; A. H. Morrison, Vice President and General Manager Chicago & Michigan Lake Shore Railroad; W. H. Cruger, Vice President Toledo, Peoria & Warsaw Railroad; E. F. Raworth, General Superintendent Vicksburg & Meridian Railroad; H. S. Haines, General Superintendent Atlantic & Gulf and Brunswick & Albany railroads; E. D. T. Myers, General Superintendent Richmond, Fredericksburg & Potomac Railroad; S. R. Steinson, General Superintendent West Wisconsin Railroad; J. P. Farley, President and Superintendent Dubuque Southwestern Railroad; Lewis Carroll, General Superintendent European & North American Railroad; Robert H. G. Minty, General Superintendent Louisville, New Albany & Chicago Railroad; H. M. Hoxie, General Superintendent International Railroad; Vernon Smith, General Manager Windsor & Annapolis Railroad; M. S. Littlefield, President Jacksonville, Pensacola & Mobile Railroad; D. L. Yulee, Vice President Florida Railroad; J. H. Gardiner, General Manager Jacksonville, Pensacola & Mobile Railroad; John F. Dickson, General Superintendent Southern Pacific Railroad; H. M. Britton, Superintendent White Water Valley Railroad; E. W. Cole, President Nashville & Chattanooga and Nashville & Northwestern railroads; W. L. Bancroft, President and General Superintendent Port Huron & Lake Michigan Railroad.

MEMBERS ADDED AT FIRST QUARTERLY MEETING.

Horace Scott, Gen. Supt. Jeffersonville, Madison & Indianapolis Railroad; Jos. E. Brown, President Western & Atlantic Railroad; J. H. Hammond, Vice-President and General Manager Macon & Brunswick Railroad of Georgia and Montgomery & Eufaula Railroad of Alabama; G. J. Foreacre, General Superintendent Western Railroad of Alabama; L. P. Grant, General Superintendent Atlanta & West Point Railroad; B. Dunham, General Superintendent Montgomery & Eufaula Railroad; W. L. Clark, General Superintendent Mobile & Girard Railroad; Henry Fink, General Superintendent Atlantic, Mississippi & Ohio Railroad; A. J. White, General Superintendent Macon & Western Railroad.

—A motion for new trial on the ground of excessive damages, in the case of John Belts vs. the Eastern Railroad Company, was overruled by Judge Gray, at Boston, and a verdict was awarded Belts of \$23,000 for injuries by the Revere disaster.



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W. H. BOARDMAN, Acting Publisher.

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Editorial Announcements.

Address.—The RAILROAD GAZETTE will be printed for the present in New York; our printing house in Chicago having been destroyed. All communications, therefore, whether editorial or business, should be directed to the New York office. The proprietor will receive subscriptions and advertisements at his office in Chicago, Nos. 63 and 65 South Canal street, but letters should be addressed to New York.

Correspondence.—We cordially invite the co-operation of the railroad public in affording us the material for a thorough and worthy railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

Articles.—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

Inventions.—No charge is made for publishing descriptions of what we consider important and interesting improvements in railroad machinery, rolling stock, etc.; but when engravings are necessary the inventor must supply them.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, except in the advertising columns. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

ASSOCIATION OF RAILROAD MANAGERS.

We give in this number of the RAILROAD GAZETTE the report of the first quarterly meeting of the Western and Southern Railway Association, which was held in Atlanta, Ga., last month. There has been an association in New England for many years we believe, but it has made little noise in the world, and, we believe, is intended rather as a convenience in settling business details between different connecting lines rather than as an aid in discussing questions in management. The Western and Southern Association occupies both fields; that is, it serves as a committee of the whole, in which is decided what the companies will do in their necessary business relations, and also as a society for the collection and discussion of facts and experiences in the operation and management of railroads, with a view to mutual improvement and the advancement of knowledge and the improvement of practice in this peculiar and very important field.

Very much may be effected by the decisions of the Association and agreements, being in a degree of the nature of contracts, which its members may make with each other. Very many existing abuses and extravagances in railroad operation, which eat up the receipts and are of no public utility, could be at once and entirely done away with if all the companies would unite upon a policy and carry it out fearlessly. But so long as one or two or three companies continue the reprehensible practice, the rest are in a manner compelled to admit it. Take, for instance, the payment of commissions for selling tickets. Hardly any one will pretend that travel is at all increased by so doing, and one of its commonest results is the impudent importuning of travelers and the deceiving and misleading of the ignorant and helpless; while there is a direct loss frequently of ten or twenty per cent. of the price of through tickets. But when one line between New York and Chicago gives a commission of two or three dollars for every through ticket sold by each of thousands of agents all over the country, it is plain that it will secure the exclusive services of all these agents unless the other companies also pay him the commission. And so the one unscrupulous company dictates the policy of all the rest, and compels the maintenance of a large and unproductive class at the

expense of the companies and the travelers. The remedy for this and other similar evils is a combination of managers and the scrupulous maintenance of the agreements they make.

Many of the questions of business coming before such an association are altogether of a private nature, and should be discussed and sometimes decided without publicity. Some of them will require the consent of all managers, and not those of the West and South only, and it would seem desirable either that the Western and Southern Association should be made a national association, or that a national association should be formed, to which territorial associations should send delegates. In fact, the Western and Southern seems to tend to become national, or rather international, for in its list of members may be found superintendents whose lines extend as far east as Buffalo, N. Y., Norfolk and Fredericksburg, Va.; and some from Maine, New Brunswick and Nova Scotia.

With regard to the discussions of general questions of management, such as seem likely to occupy a large if not the largest part of the time and attention of the Association, and which are intended to advance knowledge in the art of operating railroads, we believe they should be, for the most part at least, open and public. If they give any light—and they can hardly fail to give much—it should not be put under a bushel. If the reports of the committees and the debates of the Association are known only to the forty, sixty or one hundred members who may happen to be present at a meeting, they doubtless will profit thereby; but if the conclusions only are published, the hundreds of managers who are not present will learn little from them; and, what is worse, their experience and reflections will not be likely to be applied to the elucidation of the questions discussed, as they certainly would be, sooner or later, if the reports and debates were published. Moreover, there are thousands of men in the service of railroad companies who are not managers and consequently not qualified for membership in the Association, but whose experience and opinions would be of the greatest value in deciding many of the questions which the Association will discuss. On the question of commissions, for instance, whose experience is more valuable than that of general passenger and ticket agents? So of train-dispatching: superintendents of railroad telegraphs and train-dispatchers should have an opportunity to read and criticize what the managers may propose on this subject. And so with most other questions; there are hundreds, yes thousands, of men who are qualified to aid in the decision of one or more questions of railroad management, and who, either in conversation or published letters, would express their opinions. The managers must make the decision; but they will do well to hear their questions thoroughly discussed by all whose opinions are entitled to weight.

There is most admirable material in the Western and Southern Railway Association. The requirements for membership, indeed, secure it those men whom the proprietors of railroads have found best qualified to manage their property. Their field is one which as yet has scarcely any literature, and which needs one sadly. Questions of management have been too little discussed, and the discussions, being for the most part verbal and private, have not had a general influence. Meanwhile the business is really a new one, undergoes constant changes, and needs in very many aspects unity in principles and harmony in practice. If the new Association gains anything like the general adherence and conscientious service of the managers of the country—or of the West and South—and they give a little of their very precious and too-much occupied time to the consideration of the questions which come before them, we are confident that they will aid enormously in the advance of their most important profession—much more, doubtless, than most of them imagine. The world advances in knowledge by recording, studying and comparing experiences; and though discussions, however long and labored, may not always and immediately lead to correct decisions, they do almost always result in an increase of light—the establishment of some truth or the dissipation of some error.

The Atlanta meeting of the Association was not very well attended; but then the nature of the employment of railroad superintendents is such that their attendance at meetings can hardly be very regular. If they do their work well in committees, however, send on their reports when they cannot go with them, and see a report of the discussions, every meeting may be profitable to every member.

The Grand Trunk Company.

We have spoken of the capital account of this company as "extravagant and unreasonable." This account is \$21,356,149, and as the length of line owned by the company is about 950 miles, there exists about \$22,375 of stocks and bonds for every mile of road. On this

subject a recent number of *Herapath's Railway Journal* says:

We will conclude these few observations with a word upon the capital of the Grand Trunk. It really amounts to about the figure given in the accounts, for the leased as well as the other lines; that is to say the real capital cost to the company of the whole 1,377 miles is about \$21,250,000, because the capitals of the leased lines are, in round figures, equal to the \$3,111,000 of provincial debentures thrown behind the shares, which therefore may be properly excluded from the capital of the company. The \$3,111,000 forms part of the \$21,250,000, while the capitals of the leased lines are not included in it.

The line being 1,377 miles long, and its capital \$21,250,000, the capital cost per mile is \$15,000 per mile, or thereabouts.

That is, there is a mortgage issued by the province to secure the construction of the railroad which is not a lien on the property—at least until after dividends on the shares are earned—and which the company is not expected to pay. These provincial debentures are at the rate of \$3,275 per mile on the road owned by the company, so that the remainder of the capital account is at the rate of \$19,100 per mile.

An officer of the company calls our attention to the fact that the renewals of track (196½ miles) reported were for the half-year, and not for the year, and that these renewals amounted to 14 per cent. of the total mileage operated by the company; and, moreover, on the main line of the company from Portland to Detroit, a distance of 858 miles, where alone is the wear at all rapid, the renewals amounted to 176 miles, or more than 20 per cent., in the half-year; at which rate the entire main line would be renewed in two years and a half. On the Riviere du Loup Line (118 miles), the London Branch (31 miles), and the Arthabaska Branch (35 miles), no renewals were made or needed, the traffic being very light. The renewal of the part of the line where the wear is great and the use of steel likely to be economical is therefore not so great a task as one might think who remembered only that the company operates 1,377 miles of road.

Railroad Earnings.

The following reports of railroad earnings in April have been made:

| | 1872. | 1871. | Increase. | P. ct. | Dec. | P. ct. |
|----------------------------|-------------|-------------|-------------|--------|---------|--------|
| Central Pacific..... | \$951,300 | \$730,990 | \$220,310 | 29 | ..... | ..... |
| Chicago & Alton..... | 381,644 | 384,964 | ..... | ..... | \$7,320 | 2 |
| C. Col., Clin. & Ind..... | 366,960 | 260,698 | 106,262 | 40 | ..... | ..... |
| Erie..... | 1,396,398 | 1,233,935 | 162,463 | 13 | ..... | ..... |
| Hannib. & St. Jos..... | 198,356 | 250,061 | ..... | ..... | 342,643 | 37 |
| Illinois Central..... | 547,988 | 620,223 | ..... | ..... | 72,240 | 11 |
| Ind., Bloom. & W..... | 114,000 | 65,307 | 48,693 | 75 | ..... | ..... |
| Lake S. & Mich. So..... | 1,521,518 | 1,217,329 | 304,179 | 25 | ..... | ..... |
| Marquette & Cincln..... | 145,858 | 118,173 | 27,685 | 23 | ..... | ..... |
| Michigan Central..... | 539,873 | 470,703 | 69,170 | 14 | ..... | ..... |
| Mil. & St. Paul..... | 474,188 | 488,384 | ..... | ..... | 14,196 | 3 |
| Pacific of Missouri..... | 318,970 | ..... | 33,220 | 11 | ..... | ..... |
| St. L., Al. & T. H..... | 140,593 | 140,312 | 281 | ..... | ..... | ..... |
| St. Louis & I. Mo'n..... | 178,686 | 129,590 | 49,096 | 28 | ..... | ..... |
| St. L., Kan. C. & N'n..... | 279,890 | 222,461 | 57,429 | 26 | ..... | ..... |
| Tol., Peoria & War..... | 102,151 | 71,717 | 30,434 | 37 | ..... | ..... |
| Tol., Wabash & W..... | 447,311 | 458,076 | ..... | ..... | 10,765 | 2 |
| Union Pacific..... | 692,438 | 604,247 | 88,191 | 15 | ..... | ..... |
| Total..... | \$9,005,222 | \$7,785,974 | \$1,219,248 | 15½ | ..... | ..... |

The following earnings are for the first four months of the year:

| | 1872. | 1871. | Increase. | P. ct. | Dec. | P. ct. |
|----------------------------|--------------|--------------|-------------|--------|---------|--------|
| Central Pacific..... | \$2,991,091 | \$2,317,365 | \$673,656 | 27 | ..... | ..... |
| Chicago & Alton..... | 1,464,274 | 1,469,566 | ..... | ..... | \$5,292 | 1 |
| C. Col., Clin. & Ind..... | 1,381,141 | 1,157,196 | 223,945 | 19 | ..... | ..... |
| Illinois Central..... | 2,319,697 | 2,338,187 | ..... | ..... | 18,490 | 1 |
| Ind., Bloom. & W..... | 431,166 | 355,517 | 75,649 | 21 | ..... | ..... |
| Lake S. & Mich. So..... | 5,683,382 | 4,696,663 | 986,719 | 21 | ..... | ..... |
| Marquette & Cincln..... | 591,627 | 517,554 | 74,073 | 14 | ..... | ..... |
| Michigan Central..... | 2,088,014 | 1,775,406 | 312,608 | 17 | ..... | ..... |
| Mil. & St. Paul..... | 1,748,963 | 1,608,294 | 140,669 | 9 | ..... | ..... |
| Pacific of Missouri..... | 1,115,706 | 1,060,780 | 54,926 | 5 | ..... | ..... |
| St. L., Al. & T. H..... | 605,231 | 563,277 | 41,954 | 7 | ..... | ..... |
| St. L. & Iron Mo'n..... | 690,737 | 522,817 | 167,920 | 32 | ..... | ..... |
| St. L., Kan. C. & N'n..... | 1,068,318 | 840,437 | 227,881 | 27 | ..... | ..... |
| Tol., Peoria & War..... | 416,274 | 305,357 | 110,917 | 37 | ..... | ..... |
| Tol., Wabash & W..... | 1,779,688 | 1,545,496 | 234,192 | 15 | ..... | ..... |
| Union Pacific..... | 2,074,350 | 1,957,843 | 116,507 | 6 | ..... | ..... |
| Total..... | \$26,448,588 | \$22,960,067 | \$3,488,521 | 15.2 | ..... | ..... |

The increase for the month is thus seen to be at almost exactly the same rate as that for the four months since the 1st of January, it being 15.2-3 against 15.2.

THE STANHOPE RAILROAD COMPANY, whose charter for a modest little railroad from Stanhope to Lake Hopatcong, just to let some simple-minded Jerseymen out of the woods, contained a clause by which it is given authority to make a new railroad from New York to Philadelphia, is now on trial for its life. It has been loudly asserted and widely telegraphed that the section giving this authority was interpolated and did not really form a part of the bill as it passed the New Jersey Legislature. But so far as evidence is published it seems quite probable that the section was overlooked and that it really passed, and that under it a railroad may be made from Jersey City to Camden.

It does not follow, however, that such a road will be built. The ways of those who get railroad charters are past finding out, and often those who have desirable franchises are quite as likely to sell them to the corporation which does not want the new railroad, built as to construct the road or sell to those who will. If any one owns a charter for a new railroad from New York to Philadelphia, it is not impossible that the Pennsylvania Railroad Company will pay more than any one else for it.

THE BAGGAGE MASTERS' AND PASSENGER-TRAIN BRAKEMEN'S LIFE INSURANCE COMPANY is the name of a new association recently incorporated under the laws of Pennsylvania, which held its first annual meeting and organized in Philadelphia recently. It is reported to have already 1,500 members, and it is intended to extend its operations throughout the country. The officers of the company are: President, Anthony Salmons; First Vice-

President, R. H. McCoy; Second Vice-President, T. J. Candy; Third Vice-President, Robert Eastburn; Secretary and Treasurer, G. D. Watson; Directors, R. H. Graham, John P. Black, M. B. Hoffman, C. Heape, W. P. Evans, T. Robinson, J. Heglin, Petro De Figanere and T. McAdam.

A SUMMER TIME TABLE was agreed upon at a general meeting of railroad managers in St. Louis, on the 14th instant, at which were represented the Boston & Albany Railroad, the New York Central & Hudson River, the Pennsylvania, the Baltimore & Ohio, and most of the lines further West which connect with these to form routes from New York and Boston to Cincinnati, Louisville, New Orleans and St. Louis.

Chicago Railroad News.

Illinois Central.

There is a better prospect that before long this company, with the other two intimately associated with it so far as relates to a depot for the landing of passengers in this city, will be able to commence the construction of a grand Union depot building on the lake front. It is claimed that the company soon will have authority to condemn the land for a site, an act having been passed at the last session of the General Assembly which enables East St. Louis to do precisely the thing which the three railroad companies in Chicago wish to do. There are one or two citizens in this city who still maintain a dogged and unreasonable opposition to the surrender of the land to the railroad companies, but it is quite probable that their opposition will ultimately be found to be as futile as it has been persistent. The people of Chicago, with scarcely an individual exception beyond the persons just referred to, desire that the railroad companies may purchase the land and use it for a depot. The law permitting combination goes into effect on the first of July, when operations under its provisions will probably be commenced by the Illinois Central Company.

On Monday two loads of strawberries arrived in this city from Colden by way of this road.

A change in time will be made next Sunday.

Freight Rates.

There has recently been a reduction in freight rates on flour and grain between this city and the cities of New York and Boston. The rates now to New York are 45 cents per hundred for grain and 98 cents per barrel for flour.

Chicago & Alton.

The directors of this road are on a tour of inspection, accompanied by several of the general officers. They go to St. Louis on the main line, and return by way of Kansas City, Mexico and Louisiana.

The earnings of this road for the second week in May for the present year were \$98,289.63, against \$114,981.13 for the corresponding period last year—a decrease of \$16,691.50.

In response to an expressed wish of the people of St. Louis, this company has recently put on a through train from that city to St. Paul, by way of Burlington and Cedar Rapids.

Pittsburgh, Fort Wayne & Chicago.

This company has issued a circular announcing their determination to carry passengers to the Philadelphia convention and return for the sum of \$24.50. Tickets will be good going from May 25 to June 5, and to June 15 returning.

La Salle & Chicago.

The Common Council of this city passed the ordinance, on last Monday evening, giving this company the right of way into the city, on the route heretofore mentioned in the GAZETTE. Chicago is beginning to be convinced that she owes the wonderful powers of recuperation which she is showing to the railroads, and there is much less opposition to the admission of new roads than there was a few years ago.

Southwestern Pennsylvania.

This company has made a survey for a line close along the Uniontown Branch of the Pittsburgh & Connellsville Railroad from Connellsville to Uniontown, Pa., which, however, is not yet fully decided upon.

Union Transfer Station.

The Chicago Tribune gives the following account of a proposed transfer station for freight passing through the city and consigned from one railroad company to another. The Union Stock Yards Company is a corporation whose stock is chiefly held by the railroad companies and which is managed by the railroad officers, and it is therefore well fitted to undertake a work depending for its efficiency on the co-operation of all the railroad companies:

"It has been known to a few for several weeks past that the Union Stock Yards Company had concluded to build, in conjunction with the stock yards, an immense depot for the transfer of freight of every kind from vessels to cars, and *vice versa*, and also of 'through' freight from one line of road to another.

"The Union Stock Yards Company have a charter which authorizes them to run a railroad track almost anywhere in the county outside of the limits of the city of Chicago, and, if the stock yards were not already perfectly accessible to every railroad coming to this city, they could easily be made so. The company, however, desire to make their great transfer depot as near to the business of the city as practicable, and still retain the advantage of its connection with the stock yards tracks. They have, therefore, lately purchased a large area of land on the north side of Egan avenue, and extending westward and northward over a mile. On this they propose to erect a transfer depot over half a mile long, three stories high, and 100 feet deep.

"It will be remembered that, some years ago, the Common Council authorized the turning of Egan avenue into a canal as far east as Halsted street. This has been done, and a canal over half a mile long is now about

completed from Halsted street westward to a junction with the South Branch of Chicago River. The canal is only a few hundred yards north of the stock yards, and is intended as a place to unload lumber from vessels into the cars that have brought in cattle. The new transfer depot for freight will be built along the north bank of this canal, and will be made a place for transferring other freights than lumber and cattle, not only from vessels to cars, and *vice versa*, but particularly of freight from one road to another. As mentioned before, the charter of the Stock Yards Company authorizes them to run a railroad track in almost any direction, outside of the city limits; but to gain access to their own property on the north side of Egan avenue the company are before the Common Council asking for the privilege of laying down railroad tracks across Egan avenue, just east of Halsted street, and across the latter street just north of Egan avenue."

Grand Rapids & Newaygo.

This company has a passenger train running, and its road will be opened to Newaygo, 30 miles north by west of Grand Rapids, Mich., by the 1st of June.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

—Mr. Charles H. Cosgrave has been appointed Superintendent of Telegraph and Train Dispatcher of the West Wisconsin Railway, with headquarters at Hudson, Wis.

—Mr. S. S. Garwood has been appointed Superintendent of the Mississippi Division of the Pacific & Atlantic Telegraph Company, with headquarters at Chicago.

—J. Condit Smith has been elected President of the Dunkirk, Warren & Pittsburgh Railroad Company.

—The annual meeting of the stockholders of the New York & New Haven Railroad Company was held at New Haven May 16. The old Board of Directors were re-elected as follows: Wm. D. Bishop, of Bridgeport; George B. Carhart, George N. Miller, Abraham Van Nest, Horace F. Clark and Wilson G. Hunt, of New York; Ezekiel H. Trowbridge, of New Haven; Jonathan Godfrey, of Southport; Nathan A. Baldwin, of Milford, and Nathaniel Wheeler, of Bridgeport.

—John Foggett, General Freight and Ticket Agent of the Springfield & Illinois Southeastern Railroad, has resigned his position, and been succeeded by McLene Doherty as General Freight Agent, and C. M. Stanton as General Ticket Agent.

—Col. T. H. Hayden, General Ticket Agent, and F. M. Wilkinson, General Freight Agent of the Gilman, Clinton & Springfield Railroad, resigned on the 14th inst., and F. J. Hudson, of Springfield, was appointed General Freight and Ticket Agent of the road.

—At the annual meeting of the Kansas City & Memphis Railroad Company, April 25, the following officers and directors were chosen: Directors—Howard M. Holden, James E. Marsh, John W. Polk, Theodore S. Case, E. R. Threlkeld, Charles Long, R. T. Van Horn, D. C. Stone, Robert C. McBeth, Waldo P. Johnson, W. O. Mead. President, R. E. Van Horn; Vice-President, Waldo P. Johnson; Treasurer, Howard M. Holden; Secretary, Wm. O. Meade. A. D. LaDue resigned the Superintendency of the road.

—E. H. Johnson has been appointed Chief Engineer of the Chicago & Northwestern Railway, in place of S. M. Seymour resigned. He entered upon the discharge of his duties on the 15th of May. Mr. Johnson has for many years been Chief Engineer of the Chicago, Rock Island & Pacific Railroad.

—The Saginaw River & St. Clair Railroad stockholders lately held a meeting at East Saginaw. The following directors were elected: Charles Lee, W. H. Warner, R. B. Buckhout, Edwin Eddy, Michael Jeffers, Joseph E. Shaw and A. W. Wright.

—At a recent meeting of the Elkhart & Niles Railroad Company, in Elkhart, Ind., the following officers were chosen: Directors, J. R. Beardsley, B. D. Sherwood, A. M. Tucker, A. S. Davenport, John Cook, B. L. Davenport, H. E. Martin, John McNaughton, S. Maxon, S. Hoke, N. Sage, A. Pope, and John A. Richley; President, J. R. Beardsley; Vice-President, B. D. Sherwood; Treasurer, A. M. Tucker; Secretary, A. S. Davenport.

—At the annual meeting of the Adrian & Detroit Railroad Company the following officers were chosen: President, W. S. Wilcox; Vice President, F. R. Stebbins; Treasurer, W. H. Waldbly; Secretary, C. H. Comstock; Directors, W. S. Wilcox, George Bruce, James Berry, Henry A. Angell, Lucius Lilly, William Hayden, W. H. Waldbly, F. R. Stebbins and Henry Hart. Messrs. Lilly and Hayden represent Tecumseh. The rest are residents of Adrian.

—M. A. Merrifield has been appointed the Attorney for the Grand Haven, Quincy & Ohio Railroad Company recently organized at Union City, Mich.

—The annual meeting of the Board of Managers of the Delaware & Hudson Canal Company took place last week at the company's office, No. 79 Broadway. The following is a list of the officers elected for the ensuing year: President, Thomas Dickson; Secretary, Daniel Wilson. Board of Managers—James M. Halsted, Robert L. Kennedy, W. J. Hoppin, New York; Thomas Cornell, Rondout, N. Y.; John Jacob Astor, A. A. Low, Thomas Dickson, Scranton, Pa.; James R. Taylor, George T. Olyphant, New York; Edward J. Woolsey, Astoria, L. I.; Legrand B. Cannon, Chas. N. Talbot and Isaac H. Seymour, New York.

—The annual meeting of stockholders of the Kent County Railroad Company of Maryland was held in Charlestown, Md., on the 13th instant. The following Board of Directors was chosen for the ensuing year:

Hon. George Vickers, Jesse K. Hines, Charlestown; Richard C. Johnson, Massey's, Md.; Isaac Parsons, Wor-ton, Md.; A. P. Sharp, Baltimore; J. H. T. Jackson, William Painter, Fred Gerker, Philadelphia. At a subsequent meeting of directors the following officers were elected: President, William Painter; Secretary and Treasurer, T. Richards.

—At a meeting of the White Mountain Railroad Company, held at Concord, N. H., May 15, John E. Lyon, J. P. Pitman, Peter Butler, Cyrus Eastman and Asa P. Cato were re-elected directors. John E. Lyon was chosen President.

—At a meeting of the Memphis & Raleigh Railroad Company held in Memphis May 5, J. T. Stratton, S. H. Dunscomb, A. B. Newkirk, A. J. White, M. D. L. Stewart, J. M. Coleman, G. K. Duncan, O. F. Prescott and E. W. Brooks were elected directors for the ensuing year.

—Col. James E. Marsh has been appointed Superintendent of Construction of the Kansas City & Memphis Railroad.

—The directors of the recently-organized Fort Wayne & Rochester Railroad Company are: John Arnold, W. B. Stribling, Francis M. McDonald, William Sturgeon, H. J. Canner, John Lawrence, John Yotter, Elijah Mer-ryman and J. B. Alleman.

—Mr. S. M. Seymour, late Chief Engineer of the Chicago & Northwestern Railway, has accepted the position of engineer of the proposed new railroad from Sodus Bay, N. Y., south by west through Canandaigua to the Erie Railway at Bath.

—At the annual meeting of the Dunkirk, Warren & Pittsburgh Railroad Company, held in Fredonia, N. Y., May 7, there were represented 10,300 of the 13,000 shares, all of which were cast for the following directors: J. Condit Smith (President and Chairman of Executive Committee), Augustus Schell (Vice-President), T. D. Copp (on Executive Committee), George Barker (Executive Committee), T. L. Higgins (Executive Committee), S. M. Newton (Executive Committee), Solomon Drullard, George B. Gates, W. Finkel, H. G. Brooks, Junius R. Clark, Russell Brown, Horace F. Clark. Assistant Treasurer and Secretary, W. M. Lester.

—The stockholders of the Delaware & Raritan Canal Company, under the new act, met in Trenton, May 20, and elected the following named directors of the United New Jersey Railroad & Canal Company: Robert F. Stockton, John G. Stevens, Trenton, N. J.; John J. Astor, New York; and Ashbel Welch, Lambertville, N. J. The following were elected directors at the same time by the stockholders of the Camden & Amboy Railroad Company: Benjamin Fish, Trenton; Cambridge Livingston, New York; Samuel Welsh, Philadelphia; and William G. Cook. On the 21st the New Jersey Railroad & Transportation Company met in Jersey City and chose the following as directors of the same company: Hon. Hamilton Fish, New York; Isaac M. Scudder, Jersey City; A. L. Dennis and Nehemiah Perry, Newark, N. J. The State chooses one director. These are the last acts of the three companies named above, which are now merged in the United New Jersey Railroad & Canal Company.

—The Grand Rapids & Newaygo Railroad Company, of Michigan, has re-elected D. P. Clay, President; C. Warner, Secretary; and E. P. Fuller, Treasurer.

—At the annual election of the New York Stock Exchange the following officers were chosen: President, Edward King; Chairman, M. A. Wheelock; Vice-Chairman, James Mitchell; Secretary, B. O. White; Treasurer, D. C. Hays; Governing Committee (to serve one year), Geo. W. McLean, M. L. B. Martin, D. B. Hatch; (two years,) John Benjamin; (four years,) W. Seymour, Jr., W. B. Clerke, Frederick White, John B. Norris, B. H. Hollister, E. S. Munroe, W. S. Nichols, G. W. Fuller, Reuben Manley, W. E. Strong.

—At the annual meeting of the Louisiana & Missouri River Railroad Company in Louisiana, Mo., May 13, the following were chosen directors: John W. Reid, John T. Pendleton, Jackson; M. V. L. McClelland, Christopher Catron, Lafayette; David Landon, T. C. Rainey, Saline; Thomas Shackelford, John P. Sebrree, Howard; Robert B. Price, Boone; Charles H. Hardin, Audrain County, Mo.; William King, D. M. Tucker, Callaway; H. V. P. Block, Pike County; J. J. Mitchell, Robert P. Tansey, St. Louis. The board organized by the election of H. V. P. Block, President; John W. Reid, Vice-President; W. F. Colton, Secretary, Treasurer and Auditor; M. C. Little, Chief Engineer; T. J. C. Fagg, Attorney.

—At the annual meeting of the St. Louis & Keokuk Railroad Company, held in Louisiana, Mo., May 6, the following directors were elected: H. G. Wellman, Wm. M. Ely, Thos. Bowling, Joseph M. Gentry, J. R. Flourree, Ralls County; Bart Able and Abe McPike, St. Louis; Wm. Stark, W. C. Orr, A. G. Griffith, John O. Roberts, Wm. McIntosh and M. S. Goodman, Pike County. The board organized by the election of the following officers: H. G. Wellman, President; W. C. Orr, Vice-President; R. E. Pleasants, Secretary; H. S. Carroll, Treasurer.

—The Hannibal Courier says that it is reported that George H. Nettleton will resign his position as General Superintendent of the Hannibal & St. Joseph road, to accept the general superintendency of the Atchison, Topeka & Santa Fe Railroad.

—The Texas & Pacific Railway Company elected the following officers May 23: President, Thos. A. Scott; Vice President, Henry G. Stebbins; Treasurer and Counsel, Edwards Pierrepont; Secretary, E. B. Hart; Directors, H. G. Stebbins, Edwards Pierrepont, George W. Cass, W. T. Walters, H. B. Plant, J. Edgar Thomson, J. N. McCullough, W. C. Hite, H. D. Newcomb, E. W. Rice, Henry S. McComb, John W. Forney, John McManus, Wm. R. Travers, Wm. C. Hall, J. C. Harris and J. W. Throckmorton.

—A telegram from Norwich, N. Y., reports that on the 21st of May the case of Henry Peck against the New York Central Railroad Company was tried. This is a case brought for damages for being put off a palace car

for refusing to pay the extra fare for a drawing-room car when the ordinary car of the drawing-room train was full. The jury returned a verdict of \$8,000.

TRAFFIC AND EARNINGS.

—The following are the earnings of the Union Pacific Railroad Company for March:

| | Mar. 1872. | Mar. 1871. |
|-------------------|----------------|----------------|
| Earnings..... | \$365,861 44 | \$499,899 12 |
| Expenses..... | 366,668 67 | 275,483 43 |
| Net earnings..... | \$199,192 77 | \$224,415 69 |
| | Jan. 1 to | Jan. 1 to |
| Earnings..... | Mar. 31, 1872. | Mar. 31, 1871. |
| Expenses..... | \$1,373,912 66 | \$1,353,206 65 |
| | 1,138,764 48 | 905,305 17 |
| Net earnings..... | \$235,148 18 | \$448,091 48 |

Net earnings 1872, compared with 1871, show:

| | |
|------------------------------|-------------|
| For March, decrease..... | \$25,222 92 |
| For two months previous..... | 187,720 43 |
| And for three months..... | 212,943 35 |

The increase in gross earnings for March is \$65,962.32, or 13 per cent.; and for the three months, \$20,516, or 14 per cent. The estimated earnings for April are: 1872, \$699,438; 1871, \$604,247; increase, \$95,191, or 15½ per cent.

—The earnings of the Erie Railway for the first week of May were: 1872, \$89,902; 1871, \$75,454; increase, \$14,448, or 19 per cent.

—The earnings of the St. Louis, Kansas City & Northern Railway for the second week of May were: 1872, \$57,889; 1871, \$53,698; increase, \$4,191, or 8 per cent.

—The receipts of the Kansas Pacific Railway for the first week of May were: freight, \$44,996.72; passenger, \$38,230.40; total, \$83,227.12. Of the freight earnings \$198.69 was on government freight, and of the passenger earnings \$7,413.35 was for transporting United States troops, and \$1,400 for transporting mails, of which total of \$9,003.04 one-half is applicable on the payment of interest on bonds guaranteed by the government.

—The earnings of the Great Western Railway of Canada for the week ending April 26 were: 1872, £25,696; 1871, £17,758; increase, £7,938, or 46 per cent.

—The earnings of the Grand Trunk Railway of Canada for the week ending April 27 were: 1872, £35,900; 1871, £30,900; increase, £5,000, or 16 per cent.

—The estimated earnings of the Erie Railway for the second week of May were: 1872, \$445,949; 1871, \$374,208; increase, \$71,741, or 19 per cent.

—The receipts of the Grand Trunk Railway of Canada for the week ending May 4 were: 1872, £35,400; 1871, £32,100; increase £3,300, or 10½ per cent.

—The receipts of the Great Western Railway of Canada for the week ending May 3 were: 1872, £33,359; 1871, £16,528; increase £16,731, or 40½ per cent.

—In Eng. and the following reports of the earnings of the Atlantic & Great Western Railroad have been made:

| | |
|---------------|-----------|
| January..... | \$361,340 |
| February..... | 337,997 |
| March..... | 369,484 |
| April..... | 400,452 |

Total for the four months..... \$1,469,273

—The receipts of the St. Louis & Iron Mountain Railroad for the first week of May were: 1872, \$44,885; 1871, \$29,835; increase, \$15,050, or 49½ per cent.

—The receipts of the St. Louis & Iron Mountain Railroad for the second week of May were: 1872, \$47,881; 1871, \$29,162.78; increase, \$18,718.22, or 64 per cent.

—The receipts of the St. Louis, Alton & Terre Haute Railroad Company for the first week of May were: 1872, \$31,880; 1871, \$26,706; increase, \$5,174, or 19½ per cent.

—The receipts of the Chicago & Alton Railroad for the second week of May were: 1872, \$98,289.63; 1871, \$114,981.13; increase, \$16,691.50, or 14½ per cent.

OLD AND NEW ROADS.

Dunkirk, Warren & Pittsburgh.

The grading for the Venango Extension is about completed from Warren west to Irvineton, seven miles, being alongside of the line of the Philadelphia & Erie road. The President at the recent annual meeting promised that it would be completed to Titusville by the 1st of August.

Pittsburgh, Wheeling & Kentucky.

The *Wheeling Intelligencer* of May 15 says: "The contract between the Pittsburgh, Wheeling & Kentucky and the Pittsburgh, Cincinnati & St. Louis railroad companies, in relation to the construction and operating of the road from this city to the east end of the Steubenville Bridge, was received a day or two since, duly signed and sealed by the President of the latter company. This closes the matter and insures the building of the road."

Baltimore & Potomac.

This company has offered in England, through Jay Cooke & Co., its bonds, which we find entitled in a London paper "gold, 6 per cent., first mortgage, main-line, sinking-fund bonds," guaranteed by the Pennsylvania Railroad Company and the Northern Central Railway Company, at 8½ per cent. The company's lines will be about 91 miles, so the issue is at the rate of about \$33,000 per mile.

Richmond, Fredericksburg & Potomac.

Trains are now running over the new extension to Quantico, where connection is to be made with the Baltimore & Potomac Railroad as soon as it is completed.

Frankfort & Kokomo.

At a meeting of the directors, held at Frankfort, Ind., the contract for the building of said road was let to Cutler, Dawes & Co., of Cincinnati. The route is from Frankfort, the present northern terminus of the Logansport & Southwestern Railway, northeast to Kokomo, about 25 miles, where connection can be had with the

proposed new Toledo railroad, as well as with those now in operation to Kokomo.

Fort Wayne & Rochester.

Articles of association have been filed in Indianapolis of the Fort Wayne & Rochester Railroad Company, with a capital stock of \$200,000 in shares of \$50 each. The eastern end of this road is to be at Fort Wayne, extending in a westerly direction to Rochester, passing through Springfield and Silver Lake, about 60 miles. Eleven hundred and seventy-two shares are subscribed to the articles.

Newark, Somerset & Straitsville.

The Baltimore & Ohio Company took possession of this road, under its lease, May 15. The road, now very nearly completed, extends from Newark, O., nearly due south to Shawnee City, 44 miles, and is to be extended from the latter point southward 30 miles to Hamden, on the Marietta & Cincinnati road, at the point of junction with the Portsmouth Branch. This extension completed, the Baltimore & Ohio will have a north and south line from Sandusky to the Ohio River at Portsmouth.

Warren & Vienna.

The line is now definitely located, and the engineer is completing his plans and specifications preparatory to letting contracts. The road is to be of 3 feet gauge, about 20 miles long, and intended especially to carry coal to Warren.

Buffalo, New York & Philadelphia.

The *Emporium* (Pa.) *Independent* says that of the line of the road in that State "several sections of the work have been let—the different contractors are on the ground, collecting materials, men, tools, etc., and erecting shanties. By the middle of this month we expect to see lively times up the Portage. The work at the Summit, being the heaviest on the line, has been taken by the Superintendent under his special charge, and he proposes to see that it shall be done in proper season. The office of the Superintendent, Land Agent and Paymaster has been located for the present at Port Allegheeny." Ansel Wright is Chief Engineer.

Toledo & Woodville.

The *Toledo Blade* says that an arrangement has been consummated which insures the speedy completion of the road. The Pennsylvania Company have assumed the execution of the contract for constructing the road from its intersection with the Dayton & Michigan, at the Stock Yards to the State Line, where it will meet the Ann Arbor and other roads entering the city from that direction. The terms of this arrangement are such that ample accommodation is guaranteed all roads reaching the city from the north. It is understood that active operations under this new contract will be immediately commenced and that the work will be completed by November 4. It is especially agreed that the roadway from the State Line to the city shall be completed by the time it is waited by the Ann Arbor road.

Grand Rapids & Indiana.

The Grand Traverse *Herald* contradicts the statement that the junction of the Traverse City Railroad with the Grand Rapids & Indiana had been changed to a point near Fife Lake. It says that no change will be made in the route as originally located.

Michigan Air Line.

A meeting of delegates appointed by stockholders of this company was held in Jackson, Mich., on the 8th of May, at which it was resolved to present the following petition to the directors:

"We, the undersigned delegates representing the stockholders of the Michigan Air Line Railroad, in the localities named below, in convention assembled in the city of Jackson, this 8th day of May, 1872, would respectfully petition to your honorable body the preamble and resolutions of those whom we represent, and would further say that, after full conference, we are united in entering our solemn protest against any ratification on the part of your honorable body of any lease of said road to any company without a full recognition and protection of the stock of said railroad, as well as providing for the payment of the floating indebtedness of the same; and we further protest and remonstrate against the present so-called lease under which the Michigan Central Railroad Company are claiming the control and operate the said Michigan Air Line Railroad, being confirmed and sanctioned."

Signed—C. G. Waldo, Rufus Osborn, S. B. Allen, Tekonsha; C. B. Hoffman, Colon; H. C. Brokard, Centreville; H. A. Wetmore, Concord; Peter Mitchell, Clarendon; J. W. Vandenberg, J. P. Westcott, Homer; J. E. Prutzman, Three Rivers; Major Smith, Cassopolis.

Saginaw River & St. Clair.

At a recent meeting of this company the Treasurer reported \$2,430 received, all of which has been expended except \$1.98. Saginaw City has subscribed \$21,000, conditioned that the 20 miles of this road shall be built from the river eastward before any payment on the same shall be required. Almont offers \$50,000 if the line reaches the limits of her city, which is a little off a direct line. Other localities promise liberal aid.

Portage City & Stevens Point.

The *Plover* (Wis.) *Times* says: "The surveyors on the Portage City & Stevens Point Railroad have completed their survey as far as Hancock, and returned to Stevens Point yesterday, and to-day will commence permanently locating the road-bed between Stevens Point and Hancock. They will have the road-bed located as far as Plover in a few days."

St. Louis, Jerseyville & Springfield.

A correspondent calls attention to two articles which he thinks will give this proposed new line a considerable traffic: the stone of the Grafton quarries, which is of admirable quality and in such shape in the strata as to require the minimum of dressing; and the coal of the mines near Chesterfield, Macoupin County, which is said to be exceptionally free from sulphur and therefore excellent for iron smelting and working. The mines are

known in the vicinity as "the charcoal mines." The President, Hon. Hugh N. Cross, of Jerseyville, is a heavy cattle-dealer, a leading banker, a large farmer, and has a reputation for succeeding in what he undertakes. The other directors are well known on the line of the road. J. B. Moulton, who has been Chief Engineer of the Iron Mountain and the North Missouri roads and is now City Engineer of St. Louis, is Chief Engineer. Joel R. Woodruff, Principal Assistant, and Julius Moulton in charge of the field party.

Elkhart & Niles.

Again efforts are made to secure the building of this line. At a recent meeting in Elkhart \$50,000 was subscribed to the stock.

Sturgeon Bay & Lake Michigan Ship Canal.

The Chief Engineer, William T. Casgrain, advertises for bids for the work on this short canal, connecting Green Bay with Lake Michigan, to be handed in by May 25.

Wisconsin Valley.

W. C. Krause, who has been an assistant engineer on the Chicago, Clinton & Dubuque Railroad, has begun a survey with a corps of assistants of the above line.

Houghton & Ontonagon.

This company has completed the first ten miles out from L'Anse, and the *Houghton Gazette* is confident that the cars will be running from L'Anse to the Champion Mine, Marquette County, on or before October 1. The road will be pushed on thence to Ishpeming.

Pacific of Missouri.

This road has recently been divided into two divisions for operation, the Eastern Division, from St. Louis to Sedalia, and the Western Division, from Sedalia to Atchison with the Sedalia & Lexington Branch.

Mr. John Scott has the contract for grading the Carondelet Branch, running from Kirkwood to Carondelet, fourteen miles. It is intended to have the road in operation by the 1st of September.

St. Joseph & Denver City.

Tanner & Co., the financial agents of this company in New York, are informed that this road will be completed to its junction with the Union Pacific Railroad at Kearney (about 270 miles from St. Joseph) early in August. Nearly 5,000 men and 800 teams are engaged on the work.

St. Louis & Iron Mountain.

The Arkansas Branch is completed to a point 15 miles south of Mill Springs, and 47 miles beyond Pilot Knob. It is expected that the State line will be reached in June and Little Rock in the fall.

Kansas City & Memphis.

The general office of this company is removed from Clinton, Mo., to Kansas City, where most of the new board reside.

California Pacific.

The great floods last winter destroyed a considerable part of this road, and, it not having been put in order since, the people on the line begin to fear that the Central Pacific, which now controls the property, intends to abandon its operation.

Norfolk & Great Western.

The *Lynchburg Republican* reports that Hon. Thomas S. Flournoy, President of this company, has just returned from a trip over the future line of his proposed road, and is jubilant over its prospects. He is sanguine that the whole line will be placed under contract at an early day, and describes as exciting the contest for the terminal point between Bristol, Va., and Johnson, Tenn., a point some sixteen miles south of Bristol.

Corn Shipments at New Orleans.

Recently 270,000 bushels of corn, received in barges in bulk, at New Orleans, were transferred to European steamers within ten days.

Mobile & Northwestern.

The northwestern terminus of this road, opposite Helena, Ark., is to be called "Powell City." Twenty miles of the road from this point southeastward is ready for the ties.

Boston & Albany.

This company having advertised for proposals for a new issue of \$750,000 7 per cent. bonds, disposed of them to savings banks at from a fraction above 4 per cent. to 7 per cent. premium.

The *Boston Advertiser* says:

"The greatest amount of freight ever carried over the Boston & Albany Railroad was transported during the month of April; the greatest amount for one week during the last week in April, from the 22d to the 27th inclusive, when 3,130 cars were sent east from Springfield; the greatest amount in one day on the 24th of April, when 688 cars came east. Many who attribute this great increase in the freight traffic to the Cunard steamers will be surprised to learn that about one-third of the whole amount leaves the Boston & Albany Railroad at Worcester, to be delivered in that city and to the railroads diverging from it."

Atlantic, Mississippi & Ohio.

This company intends soon to renew about one hundred miles of its track, and also to place ten or twelve miles of steel rail in Norfolk, Lynchburg, and where the wear is most severe.

Blue Ridge Railroad.

It is reported in Columbia, S. C., that there is a movement on foot to investigate the affairs of the Blue Ridge Railroad before the courts, and that it will ultimately put the road into the hands of a receiver.

Toledo, Wabash & Western.

There is talk of extending this company's Missouri line (Hannibal to Moberly) from Moberly west by south to Kansas City. It now has a direct connection through the St. Louis, Kansas City & Northern road, over which, however, it has no control. There is room for a new line

to Kansas City on the south bank of the Missouri if the extension of the Louisiana & Missouri River road is not made.

New Haven & Derby.

This Connecticut road now connects with the Naugatuck Railroad at Ansonia, where passengers change cars; but preparations are being made for connecting the roads at Derby, three miles further south, so that passenger cars may run through between the stations north of Derby on the Naugatuck Railroad and New Haven.

Somerville & Reading.

Meetings are held in the interest of this proposed Boston suburban railroad, whose route is from Reading, on the Boston & Maine Railroad 12 miles north of Boston, southward about three miles to East Woburn, which is on the Boston & Lowell road, and thence a little east (generally less than a mile) of the latter road through Winchester and Medford to Somerville, adjoining Charlestown. The length is about 11 miles.

Mount Carbon Railroad.

The stockholders of this company have agreed to the contract for consolidation with the Philadelphia & Reading Company, which has been operating the road under a perpetual lease. The road is 8½ miles long, extending from Mount Carbon (about a mile south of Pottsville) to Mine Hill.

Texas & Pacific.

The company has sent Mr. Wheeler Durham, an engineer for some time in the service of the Chicago & Northwestern Company, to Pueblo, Colorado, to go thence to El Paso.

Chicago & Canada Southern.

This company will lay track on the section of its road between Blissfield, Mich., and the Ohio line, a few miles, and also on the approach to the proposed bridge over the Detroit River at Trenton from the river to the Detroit Branch of the Lake Shore & Michigan Southern Railway, about a mile, and then probably suspend further work in Michigan for three months.

Ohio & Toledo.

Under this name a company has been incorporated in Ohio which purposes a line from Toledo east by south in the direction of Pittsburgh. The incorporators are A. Waddell, E. Eyster, J. Dickens and J. S. Waddell.

Pennsylvania Petroleum Railroad.

This company, which is building a short line from Titusville eastward to Tidioute, has completed considerable grading and received a consignment of rails.

United New Jersey Railroad & Canal Company.

This is the name under which the Camden & Amboy Railroad and Transportation Company, the New Jersey Railroad and Transportation Company, and the Delaware & Raritan Canal Company are consolidated.

Express Dividends.

The Adams Express Company has declared a dividend of two dollars per share, and the American Merchants' Union one of three dollars per share, the latter payable July 1.

Nashua & Rochester.

The company advertises for sealed proposals for clearing, grubbing, graduation and masonry for the whole line from Nashua to Rochester, N. H., a distance of 48 miles, to be received at the office of the President, F. H. Kinnicutt, Worcester, Mass., by noon of May 31. Plans, profiles and specifications at the office of the Engineer, C. O. Davis, at Nashua, N. H.

Gilman Extension Railroad.

Articles of association of this company have been filed with the Secretary of State of Illinois, signed by Henry Crosley, of Clinton, Ill.; Wm. H. Mann, Dwight L. Parker, James H. Allen, Edward Rumley, Gilman, Ill., and John W. Wilson, Plato, Ill., who are to constitute the first Board of Directors. At a subsequent meeting of the board held at Gilman, the company was organized by electing the following officers: President, Henry Crosley, Clinton, Ill.; Vice-President, John W. Wilson, Plato, Ill.; Secretary, Dwight L. Parker, Gilman, Ill.; Treasurer, Wm. H. Mann, Gilman, Ill. The object of this company is to build a railroad from Gilman running in a northeasterly direction to the State line of Illinois and Indiana, there forming a junction with a line to be built to Plymouth or Goshen, Indiana.

Springfield & Northwestern.

The track-layers on this road are within three and one-half miles of Petersburg, Ill.

West Wisconsin.

The line of this road has been located from Orange to Elroy, 12 miles south, which place can be reached with only one tunnel, 900 feet long. This is the line which is to connect the West Wisconsin with the Madison Extension of the Northwestern.

Rockford, Rock Island & St. Louis.

The general balance sheet at the date of January 31, 1873, is published in Frankfort (Germany) papers. It gives capital stock (estimated) as \$6,482,364; mortgage bonds, \$9,000,000; various small accounts bringing up the sum to \$16,180,765.95. The construction account is \$15,967,013.53, which is at the rate of \$63,500 per mile. The receipts for January are reported at \$92,166.92; the operating expenses, \$62,647.19; leaving as net earnings, \$29,519.73, from which should be deducted rental for the use of track from Rock Island to Orion, and from Alton Junction to East St. Louis; and taxes amounting to \$8,288.62, leaving a balance applicable to interest on the bonded debt, etc., of \$21,231.11. For the seven months ending with January, the total receipts were, \$657,521.89; the expenditures, \$448,246.40; net earnings, \$209,275.49.

Mr. Cable, the President, writes to the bondholders that he can give them no guarantee for the payment of one-half of the interest on their bonds for the current year. The committee of the bondholders has sent to America as their agent Mr. A. L. Wolf, formerly United States Consul at Basle, to make a thorough investigation

of the road and all its property and its condition and prospects. He is also to obtain from Mr. Cable, on the part of the company, a definite proposition in writing to the bondholders.

The bonded debt being at the rate of about \$36,000 per mile, and the road having been located at right angles with the prevailing direction of traffic in the country through which it runs, its failure to earn the interest on its bonded debt is not surprising.

Milwaukee & Northern.

The Chilton (Wis.) Times says that the contract for grading the line between Kiel and New Holstein has been let, and work will be commenced immediately.

Walkill Valley.

This line, which is now in operation to Rosendale, is to be opened to Kingston about June 1.

Atchison, Topeka & Santa Fe.

The last gap in this road between Atchison and Wichita, on the Arkansas River, 112 miles, was closed on May 15, and regular trains will be running shortly. The road is graded to Fort Larned, 51 miles further, and the contract has been let for the grading to Fort Dodge. From one to two miles of track is being laid daily.

Walla Walla & Columbia River.

The grading on this road is completed for eight miles, from the Touchet to Dry Creek. The balance of the grading from the Touchet to the Columbia is being vigorously pushed forward. It is expected that 20 miles of the road will be in operation by harvest.

Northern Pacific.

The Olympia Tribune says that the contractors on the western end of this road have commenced work on the six miles of piling at Skookum Churek, and that the grading is also going on in the same neighborhood.

Cairo & Fulton.

The Little Rock Gazette of the 14th says that work has been commenced on the southern end of the road in that city.

Mansfield, Coldwater & Lake Michigan.

The Mansfield Herald says that the iron for this road has been all purchased and is ready for shipment, and it is expected that track-laying will shortly be commenced.

Potomac & Piedmont.

The bill allowing this company to operate its line within the District of Columbia has passed both houses of Congress.

Pittsburgh & Connellsville.

The Pittsburgh Commercial says: "When Allegheny County subscribed \$750,000 to the stock of the Pittsburgh & Connellsville Railroad Company, and issued her bonds for the same, the company guaranteed the payment of the interest until the completion of the road. When judgment was had against the county on these bonds, the stock was seized by process of the courts and sold at marshal's sale for a mere song—\$7,500. Subsequently suit was entered against the company, by the county authorities, to compel payment of the guaranteed interest. After tedious litigation, in which the case was taken a second time before the Supreme Court, the liability of the company was finally determined, and a judgment finally entered in favor of the county for about \$265,000. Since then the interest and costs have increased the amount to \$280,000. Various propositions for settlement have been made, but no conclusion was arrived at until within a day or two past, when the County Commissioners agreed to accept second-mortgage six per cent. bonds of the city of Baltimore for the whole amount due.

"In 1868, the Connellsville Railroad Company was indebted to the City of Baltimore for money loaned about \$2,000,000, which was secured by a first mortgage. To enable the company to complete the road, the city retired her first lien and took a second, permitting a new first mortgage of \$4,000,000 to precede her claim. This entitled her to a second mortgage, exclusively to secure her debt; but to enable the company to raise money to pay off floating debt and equip the road, she agreed to have the second mortgage enlarged so as to raise the amount needed and to receive of this enlarged second mortgage bonds at par for the entire amount of her debt, funding the interest, so that the first payment will be made July 1, 1873. Allegheny County was asked to make a like settlement of her comparatively small claim, and the proposition has been accepted, under the advice of counsel. The Baltimore authorities regard the security as ample, and this being the case Allegheny County will be fully protected. Had an execution been issued, and payment in money insisted upon, it would have seriously interfered with the business of the road."

Central of New Jersey.

This company's new line from Newark to Elizabeth, connecting it with the Newark & New York Railroad, and giving it practically two routes across Newark Bay and into Jersey City, is to be opened for travel early in June.

European & North American.

The shares held by a number of residents of St. John, N. B., in this company were sold by auction, the owners having refused or neglected to pay calls. About 165 shares in all found buyers, at from \$15.50 to \$19 per share.

Maine Central.

The directors of this company have decided to consolidate the shops and to locate them at Waterville, where the company owns an abundance of land.

Weathersfield & Claremont.

The preliminary survey of this road from Claremont to Cavendish, where it connects with the Rutland Railroad, will be begun in a few days.

Shepaug Valley.

The grading on the extension of this road to Danbury, Conn., is nearly completed, and the track is being put down. It is expected that through trains from Litchfield to Norwalk will run about June 1. The southern

terminus of the road is now at Hawleyville, on the Housatonic road, four or five miles northeast of Danbury. The extension will connect with the Danbury & Norwalk road.

Boston, Lowell & Nashua.

This company has leased the extension of the Wilton Railroad to Greenfield, N. H., for twenty years, the stockholders being guaranteed 6 per cent. interest, free of taxes. The extension is to be put under the control of the lessees by April, 1873. General Stark will superintend the construction.

Union Pacific.

The following is the April statement of the Land Department of the Union Pacific Railroad Company:

| SALES. | |
|---|--------------|
| April, 12,466 37-100 acres, for..... | \$51,000 05 |
| Average per acre..... | 4 09 |
| Land grant bonds canceled..... | 10,000 00 |
| Total sales to April 30, 1873: | |
| Acres, 530,433 91-100, for..... | 2,194,008 57 |
| Average per acre..... | 4 18 |
| Land belonging to the company remaining unsold, 11,340,566 9-100 acres. | |

| LAND GRANT BONDS. | |
|---|-----------------------|
| Total amount issued..... | \$10,400,000 00 |
| Less bonds canceled by Land Department..... | \$976,000 |
| Bought by Trustees..... | \$21,500—1,227,000 00 |
| Leaving bonds outstanding..... | \$9,183,000 00 |

LAND NOTES ON HAND.

April 30, 1873. Principal (interest not included).....\$1,086,827 21

Milwaukee & St. Paul.

The terms of the company's new loan of £800,000 as announced by Morton, Rose & Co., in putting it upon the London market (which they did the last week in April), were as follows: The bonds were for £100 each, issued at £98 each, payable: On application, £5; on allotment, £15; May 15, £35; July 1, £30 (less first half-yearly coupon for £8 10s. less income-tax); and August 1, 1873, the balance of £18. Payments in anticipation may be made under 6 per cent. per annum discount. These bonds bear interest at 7 per cent. per annum, payable half-yearly on January 1, and July 1 at the London office of Messrs. Morton, Rose & Co., the first coupon being payable on July 1 next; and they are redeemable on January 1, 1903, when they will become convertible into gold dollar bonds, or into preferred stock of the company. The loan is the first mortgage on the St. Paul Division of the road extending from St. Paul to La Crescent, and also on the iron railroad bridge at Hastings.

This loan is at the rate of \$30,000 per mile on the road mortgaged.

The Milwaukee Sentinel says of this company's Chicago line: "Work on this important railroad connection between this city and Chicago has been continued all winter, and the bridging is now finished between here and Racine. Since the frost came out of the ground the contractor, Mr. S. A. Harrison, has been putting on the grade all the men and teams he can find, at liberal wages—\$1.75 for men, and from \$3.75 and \$4 for teams. Already the iron is laid to the city limits, and will be put down to the crossing of the Western Union road by the middle of July. The entire line to Chicago is to be completed by the 1st of November next."

Louisiana & Missouri River.

The branch of this road from Mexico southward is now nearly completed to Jefferson City, which was originally intended to be the terminus. Now, however, there is a project to make it the beginning of a great line which from Jefferson City will extend southward to the southeastern corner of Kansas, being nearly parallel with the Atlantic & Pacific Railroad and the Sedalia & Parsons line of the Missouri, Kansas & Texas, and about midway between them. In Kansas it is proposed to construct the road due west near the southern border, passing through Chetopa, Coffeyville, etc.

La Salle & Chicago.

This company will hold a special meeting at its office, No. 706 Wabash avenue, Chicago, June 11, to vote upon propositions to increase the capital stock and to change the name of the corporation. It is now proposed to construct not simply a suburban railroad from Chicago and Riverside, which recently was all that was intended, nor a line from Chicago to La Salle, which was the original intention, but a line—or two lines—to the Mississippi River—the talk being of one to Muscatine and a branch to Keokuk. The President of the company is E. Follett Bull, of La Salle.

Houston & Texas Central.

The Chief Engineer, M. G. Howe, in his annual report for the year ending April 30, 1873, says that within the year the main line was extended from Groesbeck northward 65 miles, the Western Branch completed from Giddings to Austin, 58 miles, and the branch known as the Waco & Northwestern road completed from Bremond to Marlin, 18 miles, making a total of 141 miles of road. There is graded and ready for the rails 30 miles more of the main line, extending to Dallas, and parties are locating the line from Dallas to the Red River. A favorable route is found by what is known as "the Ridge," but lines have been run through McKinney and Sherman, which places wish to secure the road by subscriptions, which will be considerably more costly, but practicable. The final location was to be determined by the middle of May, and preparations were made for pushing the work immediately so as to complete the road to Red River without delay, the distance by way of McKinney and Sherman being 78 miles. Contracts have been made for the extension of the Waco & Northwestern road from Marlin to Waco, 26 miles, to be completed by September.

Two miles of track have been laid to connect with the Houston & Great Northern road north of Buffalo Bayou, and along the Bayou, securing a good water front, where it is proposed to construct a wharf and warehouses. The bridge over the Navasota has been replaced by a Post combination bridge of 150 feet span, erected by the American Bridge Company, and a new bridge is to be constructed where the Western Branch crosses the Brazos. The abutments are nearly completed, and the contract for constructing and erecting the three spans of 200 feet

each, has been let to the Louisville Bridge and Iron Company.

This company's road is of 5ft. 6in. gauge as far north as Corsicana, from which point north the main line is of 4ft. 8in. gauge. The Waco & Northwestern Branch is also of 4ft. 8in. gauge. Thus, it breaks gauge at two points. We understand that the company intends to reduce the entire main line to the standard gauge after a short time, and to maintain the Western Branch with its present gauge until the present broad-gauge equipment is worn out.

Brooklyn & Danielsonville.

It is proposed to construct a short branch line from Brooklyn, Conn., the county seat of Windham County, eastward four miles to Danielsonville, on the Norwich & Worcester Railroad 27 miles above Norwich. A movement to remove the court-house from Brooklyn, which now has no railroad, makes it very much in earnest about this project, which, it is thought, may be made a part of a line from Providence westward to the Boston, Hartford & Erie road a few miles beyond Brooklyn.

Texas & Pacific.

At a special meeting of the stockholders held in New York, May 20, the report of the purchase of the Southern Trans-Continental Railway and the Southern Pacific Railroad was read and unanimously confirmed. Gen. G. M. Dodge, formerly Engineer of the Union Pacific, was appointed Engineer-in-chief with full powers to proceed immediately to work.

Prussian Railroads.

Foreign journals give the following compilation of statistics from the returns of Prussian railroads for 1870, published by the government. In reading it is well to bear in mind that a Prussian mile is equal to 4.8 of our miles, and that a thaler is 69 cents gold, or, just now, about 79 cents currency; also that a kilometre is .6214 of a mile, and a franc is 18.6 cents:

The average gross receipt per mile was 79,068 thalers in 1870 (\$11,890), and 75,568 thalers in 1869; or in kilometres and francs, 39,524 francs per kilometre in 1870, and 37,784 francs in 1869; equal to an increase in 1870 of about 4.63 per cent. But while the average kilometre receipt of the State railways was 39,549 francs, and that of the private lines worked by the State no less than 48,611 francs, that of private lines worked by their own companies was but 36,551 francs. In 1870 the Prussian lines carried 664 millions of passengers, as against 62 millions in 1869, showing an increase in 1870 of 4 1/2 millions. The passenger miles run were 4004 millions in 1870, and 301 millions in 1869, or an increase for 1869 of 99 1/2 millions. Of these, however, 78 millions were on account of military movements. The expenditure has of course increased, being 20,573 francs per kilometre in 1870, against 19,728 francs in 1869, equivalent to an augmentation of 4.28 per cent. Consequently, the net receipts per kilometre for 1870 were 18,960 francs in 1869, as compared with 18,055 francs in 1869. The average proportion of working expenses to gross receipts was 52 per cent.; but while on the State lines it was 54 per cent., it was but 52 per cent. on the private lines worked by the State, and was as low as 49 per cent. on self-working private lines. The average return on the capital involved was 8.13 per cent. Out of 41 different lines, 26 returned more than 6 per cent., 12 less than 5 per cent., while 8 of them yielded over 10 per cent., and the Upper Silesian headed the list with no less than 18.10 per cent.

Oarondelet Bridge.

The following is the second section of the bill pending in Congress giving authority for the construction of this bridge over the Mississippi just below St. Louis:

SECTION 2. That the bridge authorized by the preceding section to be built shall be constructed with continuous or unbroken spans, and subject to the following conditions: First, the spans over the main channel of the river shall not be less than four hundred feet in the clear from pier to pier. Secondly, no span over the water at low-water mark shall be less than two hundred feet in the clear of abutments. Thirdly, the elevation of said bridge over the main channel shall not be less than fifty feet above high-water mark as understood at the point of location, measuring for such elevation to the lowest part of the bridge or bottom chord. Fourthly, the piers of said bridge shall be parallel with the current of the river as near as practicable. That the said company, before proceeding to the erection of said bridge, shall submit to the Secretary of War, for his examination, a design and drawings of the bridge and piers and a map of the location, giving, for the space of at least one mile above and one mile below the proposed location, the topography of the banks of the river, the shore-lines at high and low water, the direction of the current at all stages of and the soundings accurately showing the bed of the stream, the location of any other bridge or bridges, and shall furnish such other information as may be required for a full and satisfactory understanding of the subject by the Secretary of War; and if the Secretary of War is satisfied that the provisions of the law have been complied with in regard to location, the building of the piers may be at once commenced; but if it shall appear that the conditions prescribed by this act cannot be complied with at the location where it is desired to construct the bridge, the Secretary of War shall, after considering any remonstrances filed against the building of said bridge, and furnishing copies of such remonstrances to the board of engineers provided for in this act, detail a board, composed of three experienced officers of the corps of engineers, to examine the case, and may, on their recommendation, authorize such modifications in the requirements of this act, as to location and piers, as will permit the construction of the bridge; not, however, diminishing the width of the span contemplated by this act: Provided, That the free navigation of the river be not materially injured thereby.

Grand Island & Northwestern.

This company was recently incorporated in Nebraska, T. E. Sickels, General Superintendent; Thomas L. Kimball, General Ticket Agent; and S. H. H. Clark, Assistant Superintendent of the Union Pacific Railroad; together with J. W. Garnett, H. J. Paul, S. Munson and N. Sheldon being the incorporators. The route proposed is from Grand Island, on the Union Pacific 154 miles from Omaha, northwestward through Nebraska and Dakota to a junction with the Northern Pacific in Montana. Grand Island is to be the terminus of the Midland Pacific, now in operation from Nebraska City west to Lincoln, and it might serve as an outlet of the proposed road as well as the Union Pacific.

Railroad Legislation in New York.

At the recent session of the New York Legislature the bills passed relating to railroads have the following numbers and titles:

3. An act to authorize the Poughkeepsie & Eastern Railroad Company to cancel a portion of its first mortgage bonds, and to substitute therefor bonds of a larger denomination.
14. To authorize the Railroad Commissioners of the town of Lowville, Lewis County, to issue bonds.
54. To extend to the towns of Skaneateles and Spaford the provisions of the act to authorize the formation of railroad corporations.
62. Extending the provisions of certain laws permitting municipal corporations to aid in the construction of railroads.
66. To amend an act in relation to the tax of the New York Central & Hudson River Railroad Company through the town of Mentz.
71. To amend an act to authorize the Watervliet Turnpike Company to construct and maintain a railroad on their present road.
81. Amending an act relating to formation of railroad companies.
87. Extending the time for beginning the construction of the road of the Cattaraugus Railway Company.
117. Relating to the Erie Railway Company.
122. Authorizing Cazenovia & De Ruyter Railroad to take increased fare.
124. Authorizing Syracuse Northern Railroad Company to extend road to Jefferson County, &c.
135. Authorizing the city of Buffalo to borrow money and subscribe to stock of the Buffalo & Jamestown Railroad.
138. Relating to the Buffalo & Springville Railroad Company.
163. Extending the time for completing the Erie & New York City Railroad.
165. Relating to the Brooklyn City & Newtown Railroad Company.
169. Facilitating the construction of the New York & Canada Railroad.
171. Relating to the Brooklyn City Railroad Company.
178. Empowering subscriptions by municipal corporations to bonds of the Rochester & State Line Railway in place of stock.
182. Authorizing the city of Rochester to issue bonds in aid of the Lake Ontario Shore Railroad.
183. Authorizing the city of Rochester to issue bonds in aid of the Rochester, Nunda & Pennsylvania Railroad.
125. Authorizing the city of Rochester to issue bonds in aid of the Rochester & State Line Railroad.
240. Extension of tracks of the Second Avenue Railroad in New York city.
244. In relation to the Chemung Railroad Company.
265. Amending act to facilitate construction of New York & Canada Railroad.
292. Amending act relating to a street railroad in the city of Auburn.
296. Relating to the Sodus Bay, Corning & New York Railroad Company.
305. Relating to the Pelham & Port Chester Railroad Company.
330. Relating to Hudson Suspension Bridge & New England Railway Company.
340. Relating to the highway tax of the New York Central Railroad Company through the town of Macedon.
350. Amending the act authorizing the formation of railroad corporations.
351. Extending the Utica, Chenango & Cortland Railroad.
365. For the relief of the Coney Island & Brooklyn Railroad Company.
370. Relating to the Buffalo East-side Railroad Company.
399. Relating to the Oswego Railroad Bridge Company.
453. Changing the name of the Brooklyn City, Hunter's Point & Prospect Park Railroad to Crosstown Railroad Company.
454. Regulating the rate of charges for carrying passengers on the Grovesville & Northville Railroad.
467. Concerning the Syracuse Branch of the New York, Utica & Ogdensburg Railroad.
474. Relating to the Buffalo street railroad.
476. Relating to the extension of the Syracuse Northern Railroad Company.
489. Providing for exchange of mortgage bonds of the Poughkeepsie & Eastern Railroad.
501. Relief of Lake Champlain & Moriah Railroad Company.
516. Extending railroad bonding act to Erie County.
521. In relation to railroad in Twenty-third street, New York city.
527. Incorporating the Oswego Railroad Company.
552. Extending Hunter's Point, Ravenswood & Astoria Railroad.
553. Extending Ridgefield & New York Railroad.
561. Incorporating street railway from Watkins to Havana.
576. Relief of the Rochester & State Line Railway.
578. Relating to New York & Albany Railroad Company.
591. Relating to the Pennsylvania & Sodus Bay Railroad.
594. To authorize the Utica, Ithaca & Elmira Railroad Company to extend their road.
597. To extend the time for the completion of the Rondout & Port Jervis Railroad Company.
601. To authorize the Buffalo, New York & Philadelphia Railroad Company to guarantee the bonds of other railroad companies.

This is a total of 52 bills out of the 602 passed by this Legislature.

Mississippi Central.

The route of the proposed extension of this railroad from Jackson, Tennessee, to Cairo, will, it is reported, be nearly due north from Jackson to the Paducah & Gulf road at Mayfield and thence northwest to Cairo. This

will give almost an air-line to Paducah, and will be far enough from other roads to secure a considerable local traffic.

The Development of Traffic in Manufacturing Districts.

We give herewith the first portion of Part III. of the last report of the Massachusetts Railroad Commissioners, which is in effect a treatise—and an admirable one—on the above subject:

The last portion of the present report the Commissioners propose to devote to the consideration of those questions of more general interest arising out of the material relations existing between the people of the Commonwealth and the several members of its railroad system, stating as clearly and succinctly as they can the reasons of their action during the past year, the ends they have had in view, the means they have adopted toward the attainment of those ends, and finally the course they propose to pursue, unless otherwise instructed, during the coming year.

A definite plan, both of investigation and of action, has been pursued by this Board since its first organization, as steadily as circumstances would permit. It was first sought, through a thorough analysis of the past and present industrial conditions of Massachusetts, to arrive at a clearly-defined conception of the policy on the part of its railroad corporations which was best calculated to meet the needs and to promote the development of the State. This once established and accepted as correct, the methods through which the private corporations controlling the several members of the railroad system should be induced to adopt that policy would be matter for ultimate discussion.

The first part of the work—the analysis of the industrial condition and of the consequent requirements as regards transportation of the existing community of Massachusetts—was a comparatively simple task, and one in which the conclusions arrived at admitted of little discussion. To this subject the larger portion of the first annual report of the Board was devoted. The relative importance to the community of its several leading branches of industry was found greatly to have altered since the construction of the railroad system was begun. While, as was indicated in the tables published in the first report, the products of the industry of Massachusetts had developed more than fourfold between the years 1845 and 1865, rising from an aggregate of \$125,000,000 in the first year to nearly \$520,000,000 according to the census of the last, a very great change was noticed in the growth of the several industries contributing to this result. The original branches of industry from which the people of the State had accumulated the basis of their subsequent wealth, the fisheries and agriculture, had remained during the period referred to nearly stationary, the former contributing an increase in 1865 of less than \$50,000 over the amount returned from the same source in 1845, or less than the eightieth part of one per cent. of the total increase; while the relative importance of this industry to the entire industry of the State had, during the same period, decreased from 8.08 to 2.11 per cent. of the whole. During the same period the second source of prosperity, foreign commerce, had increased less than \$15,000,000, or 3.5 per cent. of the whole; while on the other hand manufacturing production in all its branches had undergone the amazing development of \$326,000,000, or 77 per cent. of the whole increase. These conclusions, drawn from a comparison of statistics, did but verify that which was matter of almost common notoriety, and which has been yet more strikingly revealed by the figures of the last United States census. It had long been matter of general observation that the farmers of New England were carrying on a most unequal struggle with those who cultivated the richer soils of the West, which the railroads were yearly bringing into more direct competition with them. All question which may have hitherto existed upon this point, has been removed by the recent investigations of the Bureau of Labor Statistics. The fisheries, also, except the inland, were in a stationary, if not languishing condition, and the recent national census has indicated that the fishing towns, save in certain exceptional cases, have experienced within the last ten years a decline in population. It is likewise a matter of equal notoriety that the whole foreign commerce of the State, once distributed among several thriving ports, has long since entirely concentrated at Boston, while even there it has for some years been in a languishing condition, from which it has but recently begun to revive. Meanwhile, within the twenty years referred to, the whole interior of the State had been revolutionized. Cities, towns and villages devoted to almost innumerable branches of manufacturing industry, have sprung up in every direction, and are increasing with wonderful rapidity. The State is thus becoming one vast workshop sending the results of its labor all over the world.

Arguing from the result of this analysis it required but little reflection to decide upon the policy on the part of the railroad corporations best calculated under these circumstances to promote the common interest. The case, indeed, hardly admitted of doubt. The future of every material interest of Massachusetts, whether of agriculture, of fisheries or of commerce, was clearly involved in the utmost possible development of her manufacturing industry. Could the State and the region of which it is the geographical and business center be gradually developed into the recognized manufacturing center—the Belgium, in fact, of the North American continent—there need no apprehension exist as to the continued prosperity of all collateral interests. The necessary demand existing in wealthy and populous manufacturing towns would create, and that alone could create, a reliable home market for every possible product of the soil or of the sea, and the immediate proximity of this market would enable the New England agriculturist or the New England fisherman to sustain himself in the work of production against the superior natural advantages enjoyed by others. A system of transportation, therefore, which tended to develop manufacturing industry, indirectly and not remotely stimulated every other branch of production. This solidarity of interest indicated with great precision the point upon which efforts should be concentrated.

Fortunately, also, as greatly simplifying the questions they were called upon to consider, at the very time the Commissioners began their labors one long-standing cause of difficulty and of popular complaint was permanently removed. The increased proportional cost of transporting agricultural products from the West to Boston over the cost to other points of shipment, combined with the failure of the railroad corporations to furnish either access to deep water or the most approved appliances, such as elevators, etc., to handle such produce when brought to Boston, had for years constituted a ground of complaint against certain of the principal railroad companies of the State. The whole foreign commerce of Massachusetts languished, also, for the reason that foreign vessels bringing cargoes into that port had been obliged to go elsewhere in search of a return freight; it had, indeed, become almost a custom for ships after discharging at Boston, to go round to New York in ballast, there to procure outward cargoes. To such a length has this gone that in the year 1867 the outward bound Cunard steamers were withdrawn by their owners, and, for the first time since ocean steam navigation was an established success, Boston was threatened with a complete cessation of all direct steam communication with Liverpool and Europe. In their first annual report the Commissioners had the satisfaction of stating that arrangements had already then been perfected which made it very improbable that this evil would be of long continuance. The Grand Junction

TABLE No. 5.

| | FLOUR—BARRELS. | | | | COBN—BUSHELS. | | | | OATS—BUSHELS. | | | | BARLEY—BUSHELS. | | | |
|-----------------------------------|----------------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------------|---------|---------|---------|
| | 1868. | 1869. | 1870. | 1871. | 1868. | 1869. | 1870. | 1871. | 1868. | 1869. | 1870. | 1871. | 1868. | 1869. | 1870. | 1871. |
| Boston & Albany Railroad..... | 646,684 | 728,846 | 864,380 | 802,365 | 376,868 | 1,031,322 | 760,713 | 1,674,301 | 418,063 | 721,128 | 1,001,223 | 1,675,970 | 728 | 12,999 | 15,970 | 29,669 |
| Northern Railroad..... | 53,060 | 65,107 | 78,705 | 99,700 | 77,145 | 282,955 | 500,744 | 151,295 | 83,234 | 260,513 | 313,629 | 223,479 | 154,535 | 99,610 | 105,215 | 182,256 |
| Fitchburg Railroad..... | 94,211 | 91,874 | 52,869 | 61,451 | 39,862 | 64,007 | 108,964 | 118,960 | 104,737 | 95,034 | 361,446 | 128,217 | 42,688 | 10,104 | 33,185 | 14,929 |
| Grand Junction..... | ..... | ..... | ..... | 88,586 | ..... | ..... | ..... | 1,212,344 | ..... | ..... | ..... | 216,420 | ..... | ..... | ..... | 1,937 |
| Total by railroads from West..... | 733,955 | 818,827 | 995,950 | 1,052,042 | 483,875 | 1,381,284 | 1,370,421 | 3,156,800 | 606,033 | 1,076,675 | 1,676,108 | 2,344,066 | 197,951 | 122,713 | 254,370 | 228,811 |
| Boston & Maine Railroad..... | 16,515 | 18,238 | 17,534 | 14,784 | 1,574 | 896 | 5,129 | 3,298 | 55,600 | 3,100 | 77,337 | 1,778 | 25,135 | 26,005 | 16,753 | 747 |
| Providence Railroad..... | 88,683 | 61,281 | 51,339 | 31,159 | 1,100 | 632 | 738 | 2,406 | 3,593 | 3,083 | 2,211 | 4,152 | ..... | ..... | 16,581 | 26,393 |
| Old Colony & Newport Railway..... | 5,711 | 12,544 | 4,143 | 5,143 | ..... | 800 | 2,800 | 75 | ..... | ..... | 1,504 | 40 | ..... | ..... | 625 | ..... |
| Portland steamer..... | 53,992 | 40,224 | 19,767 | 30,186 | 2,695 | ..... | 7,085 | 2,913 | 332 | 332 | 63,698 | 6,537 | 4,020 | 13,370 | 21,875 | 9,351 |
| New York steamer..... | 307,813 | 271,635 | 288,946 | 281,135 | 68,921 | 2,356 | 5,812 | 23,192 | 49,421 | 10,840 | 2,440 | 1,028 | ..... | 16,414 | 6,661 | 8,228 |
| Balt more steamer..... | 131,961 | 73,656 | 169,184 | 171,175 | 71,328 | 167,329 | 119,323 | 30,314 | 22,146 | 19,637 | 33,682 | 53,835 | ..... | ..... | ..... | 8,390 |
| Philadelphia steamer..... | 25,013 | 3,699 | 14,310 | 1,891 | 100,441 | 70,606 | 180,061 | 94,836 | 8,216 | 5,476 | 23,377 | 8,966 | 1,740 | ..... | ..... | ..... |
| New Orleans steamer..... | 15,213 | 6,952 | ..... | ..... | 205,701 | 17,231 | 80 | 80 | 6,138 | ..... | 40 | ..... | ..... | ..... | ..... | ..... |
| Sail vessels..... | 54,637 | 16,190 | 29,374 | 12,890 | 1,395,399 | 774,555 | 535,462 | 394,890 | 209,565 | 294,713 | 169,394 | 103,431 | 33,144 | 57,061 | 39,803 | 30,540 |
| Other sources..... | 1,190 | 2,979 | 64,095 | ..... | 21,371 | ..... | 89,570 | ..... | 1,536 | 50,815 | ..... | ..... | ..... | 5,323 | 4,248 | ..... |
| Total from seaboard..... | 701,727 | 506,458 | 652,712 | 549,303 | 1,847,159 | 1,053,678 | 945,981 | 481,303 | 656,037 | 328,756 | 423,833 | 179,807 | 64,039 | 118,173 | 106,546 | 84,550 |
| Total from all sources..... | 1,435,682 | 1,325,285 | 1,654,662 | 1,601,345 | 2,331,034 | 2,439,960 | 2,316,402 | 3,638,103 | 1,262,070 | 1,415,431 | 2,099,961 | 2,423,893 | 261,990 | 240,886 | 360,916 | 313,370 |

Railway had some time previously passed into the hands of the Boston & Albany Railroad Company, and that corporation was then building an elevator at East Boston, and had made arrangements under which it was enabled to lay down consignments for actual shipment to foreign points at Boston, at the same rate from interior points at which they were laid down in New York.

The Commissioners then expressed a confident hope that these changes, and the known advantages of Boston as a place of export over New York in other respects, such as accuracy, promptness, etc., would constitute a sufficient inducement to Western shippers to export through this channel. In the two years which have since elapsed, this hope has been fully realized. During the last railroad year only did the preparations referred to in 1870 fully develop their results; but during the autumn of 1871 outward-bound freights accumulated at Boston in excess of all means of transportation, and great quantities of breadstuffs, etc., have lain in the elevators, and even in the cars upon the track, awaiting opportunity for shipment. The accompanying table (Table No. 5) shows the course of grain shipment from the West to Boston during the last four years, and since the organization of this Board. It perfectly illustrates the rapid course of railroad development in this description of business. It will be noticed that while in 1868 about one-half of the barrels of flour and more than two-thirds of all other cereals which reached Boston reached it by sea, during the last year these proportions had decreased to one-third of the barrels of flour and one-seventh of the other cereals. The result of this change upon the commerce of Boston has been most encouraging; not only have the lines of ocean steamers been returned to the port, but the arrivals and clearances have largely increased, and while the imports have risen 27 per cent., the exports have increased in value no less than 57 per cent. Meanwhile the development in this direction is rapidly progressing. The Boston & Lowell, as the representative of the northern line of roads, is preparing for a large deep-water business on the Mystic flats; and the Fitchburg road is considering the propriety of making some arrangements for the reception of the increased business it anticipates upon the completion of the Hoosac Tunnel.

The exterior or through railroad business of the State cannot, therefore, but be considered as in a satisfactory and improving condition. So far as transportation is concerned, the result desired in this respect may be considered as attained. This branch, however, of a foreign commerce, the export of the agricultural products of the West, however important it may be, interests but one city in the State, and but a comparatively small portion of the people. In their first report the Commissioners ventured the opinion that the material for a healthy and really profitable commerce for the people of Massachusetts would probably be found in the wants and products of their own workshops rather than elsewhere. An analysis of the elements entering into the largely increased money value of the imports at Boston during 1871 fully corroborates this proposition. The great staples of import are the raw materials of manufactures—coal, cotton, logwood, hemp, hides, molasses, sugar, tobacco, indigo and wool. The importation of these staples depends on the demand which exists for them, and that demand depends wholly on the manufacturing development. No matter, therefore, from what standpoint of individual interest the investigation sets out, it returns to the same conclusion: the development of her manufacturing industry is the first material interest of Massachusetts, and so much is it the first, that in the development of this industry is found to be included the development of all other industries.

Accepting this as a fundamental principle, therefore, the Commissioners had next to consider the policy on the part of the railroad companies which experience and common sense would indicate as that best calculated to supply the wants and stimulate the development of a manufacturing community. In approaching this question, however, the Commissioners were obliged to keep the circumstances of railroad companies carefully in mind. They could not proceed on the assumption that these corporations were mere public agencies, the interests of which might properly be sacrificed when a decided balance of public advantage would clearly result from so doing. The railroads, on the contrary, were the property of private companies to whom a franchise had been granted which devolved upon them certain public duties. They could not in justice be called upon to labor at a loss. However deeply, therefore, the members of this Board might be impressed with a sense of the public exigency calling for the adoption of a certain policy, they were obliged not to lose sight of the effect which the adoption of that policy would have upon those owning the railroads. Those who manage the railroads directly—the Presidents and boards of directors—have two duties to perform, the one to their stockholders and the other to the community. They are essentially trustees; and in the first place they are the trustees of those who elected them to their offices. As such they would be bound, upon every principle of duty, to resist to the uttermost every attempt, whencesoever emanating, to deprive those whom they immediately represent of that reasonable profit to which they are lawfully entitled. It is moreover of scarcely less importance to the community than to the body of immediate stockholders that every railroad should be amply remunerative. A poor, bankrupt, or even needy company almost as a necessary consequence has a road ill-equipped, unsafe and insufficiently operated; and indeed, all such as a rule constitute a heavy drawback on the communities which they are supposed to serve. Any policy, therefore, the adoption of which the Commissioners might urge on the companies, would, if in practice it was found to unduly reduce net earnings, result as disastrously to the community as to the stockholders.

In approaching the railroad officials with any proposed experiment in transportation, the Commissioners had, therefore, to be prepared to show them not only that such experiment in its result would greatly subserve the public interest, but they had further to satisfy them that it would also benefit, or would at least inflict no serious or permanent injury upon the railroad stockholders. To any adventurous or immature suggestion

of change the railroad officials would not only have been justified, but in duty would have been bound to reply, that as guardians they could not allow the property intrusted to their care to be gravely jeopardized for a possible public benefit; that stockholders were dependent upon dividends for the means of living, and that measures of reform which threatened seriously to curtail dividends should not be attempted by those managing private corporate properties in trust for others.

The Commissioners have here attempted to define their position on these points with all possible distinctness. They desire to do this for obvious reasons. Whenever they have attempted any step in advance as a result of their investigations they have been met with a statement of some of these elementary propositions put forward as if they were recent discoveries. It is very desirable that the discussion should make some progress, and to this end the Commissioners desire once for all to concede in the fullest manner both the training and experience of the railroad officials and their positions as trustees;—on behalf of the community at large, as well as the stockholder class in particular, they equally recognize the expediency of any measure which would tend either to unduly decrease the reasonable returns on capital already invested in railroad enterprises, or to discourage further investments. These questions disposed of, and having definitely satisfied themselves as to the policy as regards railroad transportation which would most directly conduce to the industrial development of the Commonwealth, it remained for the Commissioners to suggest some method through which this policy could be carried into effect without serious curtailment of net profits.

Had the State itself owned or controlled any portion of the railroad system, so that it had found itself in a position to experiment at its own risk, the Commissioners would not have hesitated to recommend a trial of the bold policy of heavy reduction on all articles of raw material entering into manufactures, which some years ago was inaugurated in Belgium and there resulted in a brilliant success in which community and corporations shared equally. A similar success achieved at this time in Massachusetts would probably secure to the State for the next half century an established pre-eminence among American manufacturing communities. Any such course was, however, manifestly out of the question where all the railroads were controlled by private corporations. It only remained, therefore, to present at this time a general policy, and through a slow course of argument and public discussion to ultimately and by degrees effect its adoption. This general policy, which the Commissioners have during the last year urged upon the railroad corporations, was a very simple one, in no respect original with this Board.

It is a perfectly well-established fact in railroad economy that where a community is industrially in an elastic condition, ready at once to respond to any remission of burdens or improved appliances, a reduction of railroad charges within certain limits does not necessarily involve any loss of net profits to the corporations making it. The increase of business and consequent multiplication of reduced profits more than compensates for the smaller return from each transaction. But in effecting reductions and tariff reforms, the concessions which are to be made should not be distributed over too many objects, so that, through an excessive division, their influence may not be felt, but on the contrary, they should be concentrated on one or a few objects of general use, so that the interests affected may experience a considerable impetus, and thus, through the resulting development, may, not remotely, return even more than was conceded. When, therefore, a railroad company, in response to a public demand for a reduction of rates, makes a trifling average reduction throughout its tariff, it does that which experience shows is apt to reduce its own receipts by the exact measure of the concession made, while it perceptibly benefits almost no one.

Had the industry of Massachusetts been devoted to the production of any one staple, the application of these principles would have been a comparatively easy task. This, however, is very far from being the case. Certain towns in the State do, indeed, devote themselves almost exclusively to particular industries, as Lowell and Lawrence to the manufacture of textile fabrics, and Lynn to that of boots and shoes; but other towns, such as Springfield and Worcester, have an extremely varied industry, and it is not easy to specify any one article directly entering into manufactured products, a cheap supply of which would be a common benefit. Everything in fact is needed, and everything has to be brought from without the limits of the State. The greatest good of the greatest number in a manufacturing community was the general end toward which efforts had to be concentrated. A decision as to how this could most effectively be secured once arrived at, the Commissioners proposed to urge upon the corporations heavy and concentrated reductions on some one article specified; or, in case, under the peculiar conditions of the community which any corporation supplied, a reduction on this article was of minor importance, then an equally concentrated reduction on some other no less important item in transportation. Greatly reduced tariff charges for the carriage of coal appeared to the Commissioners, both in its practical importance and by way of illustration, the point toward which they could direct their efforts with the greatest assurance of success.

Next to the possession of a large body of skilled and intelligent citizens, the most essential element to the success of all manufacturing industry is the control of a cheap and reliable source of power with which to keep machinery in motion. This is enjoyed by New England only in the form of its mill-privileges, and these are subject not only to the three great drawbacks in the value of all water-power, ice, droughts and frosts, but as is now very generally known, this source of power is year by year diminishing. This is partially owing to the felling of forests, but much more to a superior cultivation which drains the swamps and low grounds which were formerly natural reservoirs. To such an extent has this process of shedding the water been carried that, not only is it estimated that the reliable power of valuable mill-privileges has been reduced forty per cent. but the freshets have so increased that twice within the

last fifteen years it has been found necessary to elevate the bridges over such a river as the Connecticut. This change is still going on, and, with the increased population of the State, its influence will become more and more pronounced.

Meanwhile, though in itself and under the most favorable conditions water-power is unquestionably the cheapest of all means of operating machinery, it is yet mainly of use as a propelling force, and even where it is enjoyed in perfect abundance, a very considerable supply of fuel is also required in the complicated processes of modern production. Next to food, shelter and clothing, fuel is also the greatest necessity of life. The inestimable value of a cheap and reliable supply of coal to a manufacturing community is singularly illustrated in the case of England. The annual production of the mines of that country has now reached the enormous amount of 120,000,000 tons, and Mr. Gladstone, then Chancellor of the Exchequer, in his Budget speech of 1866, in the House of Commons, did not hesitate to attribute to this fact the industrial prosperity of Great Britain. He then used the following language:

"A race is going on between nations in industry and enterprise, and no doubt can exist on the question which nation is at this moment foremost in the race. The people of the United Kingdom are by far the foremost. We have undoubtedly got the start in the race, and it behooves us to inquire what special cause has given it to us; * * * the chief cause is the possession of our mineral treasures: the fact not merely of the possession of coal, but of the possession of vast stores of coal under such circumstances that we can raise it to the surface at a lower price than any other country in the world; * * *

"I think it is clear that at whatever time we may cease to be able to raise coal at a lower price than any country, our relative position toward other nations must be seriously injured. * * * In a subsequent debate Mr. Vivian said: "It is utterly impossible to exaggerate the enormous importance of this question. The greatness and prosperity of England repose on her manufactures, and her manufactures repose on her coal." To the same effect Mr. Liddell remarked: "It is a mere truism to say that the manufacturing supremacy of this country depends upon our retaining a cheap and abundant supply of coal," and he added, "I do not regard the prospect of America being our competitor with alarm or envy, but I wish to point out that an advance in the price of coal will turn the scale in favor of that country." These and similar expressions of opinion in the course of several lengthy debates were controverted by no one.

The Commissioners by no means wish to unduly magnify the importance of this question as an element in the industrial future of Massachusetts. The manufacture of iron, and especially of pig-iron, calling for a great consumption of fuel, is a far more important feature in the industry of England than in that of this Commonwealth. The people of Massachusetts have neither fuel nor ores of their own, and they consequently have turned their attention more particularly to those branches of manufactures in which skilled labor plays a much more important part than coal. In many branches of our industry they are well aware that the mere cost of power is but an insignificant item in the expense of production. Nevertheless, into all of them it does enter in some degree, and as such may undoubtedly be classed with food, and labor itself, as a prime element in our industrial future.

Accepting this, therefore, as that raw material, whether of industry or of comfort, which the community stood most in need of—pressing it forward as a particular illustration of a general policy, the adoption of which they wished to urge—the Commissioners have next sought to convince the several railroad corporations that the cheapest possible carriage of coal by them, amounting in fact to carriage at cost, was a matter in which they were no less materially interested than was the community itself. In the minds of the Commissioners this proposition almost admitted of demonstration. No railroad corporation can ever, for any length of time, succeed in separating its own interests from those of the community it serves—the growth of that community is its growth, and any reasonable policy which will surely tend to the increased prosperity of that community cannot fail to redound to its own emolument. This elementary proposition no one will deny, so long as the statistics of Massachusetts show that every human being on the line of a railway yearly contributes to its treasury an average amount not less than seventeen dollars. An increase in population upon any line of railroad simply means an increase in the number of these tribute payers—a gradual departure of population from its line to other localities more favorable to the exercise of their peculiar industries, means simply a reduction of its profits. The vastly greater portion of the railroads of Massachusetts were constructed to subserve the wants of interior regions. To all of the more important of these a cheap supply of all articles of raw material, and more especially of coal, is almost as the breath of life to their industry. It is from these fields that the railroad companies gather their harvest of dividends, and in the successful production of that harvest, a cheap and reliable source of power is the prime essential. It is, in fact, to the manufacturer all that manure is to the agriculturist, and it has seemed to the Commissioners, and during the last year they have repeatedly urged it on railroad officials, that it was as bad economy for them to insist upon receiving large profits from the carriage of coal along the lines of their roads as it would be for a farmer to insist upon being handsomely paid for the carriage of every load of manure which he spread upon his fields. In the one case as in the other, the carrier should look for his reward in the increased production of his territory—it is the crop he seeks for and not his pay as a carter.*

* As this report was passing through the press a singularly apt illustration of the correctness of the proposition here advanced was furnished on the high authority of the Philadelphia, Wilmington & Baltimore Railroad Company.

"This company encourages the cultivation of the Peninsula by transporting manures at a slight advance upon cost, and by moving the fruit at high speed, in cars adapted to the business, mounted upon springs and trucks like those of passenger cars and well ventilated; while charging for the service rates which are very low, con-

Very numerous and pointed illustrations could be cited in support of this view. The Commissioners have, in discussion with officials of certain of the more important railroads of the State, gone so far as to maintain, though without urging upon any company the adoption of such a measure, that it would be not only a wise but a paying policy for any railroad corporation to hold out a standing proposition that it would for a space of five or more years transport without charge all the coal or other single article of raw material required for manufacturing purposes by any new manufacturing company which would establish itself upon the line of its road; the railroad in such cases looking to make good its losses in gratuitous carriage by increased receipts from travel, and for the carriage of all manufactured articles and articles of domestic consumption to and from a more populous and busy community. The Commissioners cannot cite any precedent in direct support of such a proposition, but they can cite one which comes very near to it. In 1869 a land company was organized at Wollaston, a station about six miles from Boston on the Old Colony & Newport Railway. In order to promote building at this place, and so increase their business at the station, the railroad company offered a free pass for three years to one person residing in any house which should be constructed there. At the time this offer was made, in 1869, the annual receipts of Wollaston station amounted to only \$2,099 per annum, received from 12,793 passengers. On the first of October, 1871, some seventy-five houses had been erected in the neighborhood, from which as many persons had a right to travel over the road to Boston on a free pass; yet at the same time the receipts to the road had risen to \$6,399 per annum, and the passengers to 48,270. (See Table, ante, p. 75.) The cost of a season ticket from Boston to Wollaston is \$64 per annum, and the free passes would therefore in this case represent an amount of travel for which the road would ordinarily receive \$4,700 a year. This sum had, therefore, in this case been temporarily sacrificed, representing the carriage of so much raw material—coal, cotton, iron or other article of prime necessity—in order to secure at once the \$4,300, representing the usual and inevitable return from the consequent increased population on the line of the road, while, as passes expire, the \$4,700 per annum will also be secured in perpetuity.

Again, take the two cases of Lowell and of Fall River—two of the leading cities of the Commonwealth, and competitors in the same branch of manufacturing industry. Both started in it many years ago, using water as the source of their motive-power. So far as cotton spinning was concerned Lowell was in the year 1865 largely in advance—returning 385,412 spindles in the census of that year, while Fall River returned but 241,218. Shortly after that Fall River exhausted her water-power, and more recently Lowell has done the same. The progress of each place then came to depend upon the possibility of obtaining a cheap and reliable supply of new power. Fall River was situated upon the southern seaboard, while Lowell was twenty-six miles by rail removed from tide-water. The mills of Fall River, either now in operation or in course of construction, contain 1,017,114 spindles; while Lowell numbers only 570,586.

The Commissioners by no means wish to be considered as expressing an opinion that it is to its more reliable and cheaper supply of coal alone that the recent remarkable development of Fall River is due; it is probably attributable in at least an equal degree to other causes connected with the organization of its industry. At the same time they are led to believe that this proximity to the coal supply has been, and is, one essential point in its development, without which it would not have taken place. Meanwhile, the future of Lowell, whether it is to be a stationary or a progressive place, would seem to be wholly bound up in the question of an adequate and reliable supply of cheap power. Every considerable mill in that city has already been forced to have recourse, in a large degree, to auxiliary steam power, having already introduced into their works engines with an aggregate of 5,320 horse power, and consuming, in all the processes of manufacture, some 41,000 tons of coal per annum. Upon the prompt and economical feeding of these engines the future growth of Lowell exclusively depends.

From among a very large number of communications on this subject, sent to the Commissioners from all parts of the State, a memorial received by them from certain of the manufacturers of Lowell has been selected for publication as sufficiently illustrating the proposition here advanced, and it will be found in Appendix D of this report. To its statements and conclusions the Commissioners desire to call especial attention. As regards the facts upon which this memorial is founded, the Commissioners have already stated that they have not examined into them, and are not responsible for them. These, however, in no way affect the importance of the communication in its bearing on the general question. It will be noticed, in this case, that the alleged causes of complaint arise from demurrage, and the expense and inconvenience incident thereto, rather than from high rates of freight. At the same time, on the statement made by the manager of the company in another part of this report, this last point would be worthy of consideration. Taking the facts as given in the communication from the manager of the Boston & Lowell road, printed in the first part of this report (ante pp. 30-5), and examining them in the light of the returns of the company for the present year, it is not easy to see how less than two-thirds of the entire amount here charged for the carriage of this article of prime necessity can represent anything but profit to the railroad company. It is very true that the cost of power, as compared with labor and other raw materials, enters only in a slight degree into the production of textile fabrics, having been estimated as low even as one per cent. The presence of a cheap and reliable source of motive-power caused Lowell, nevertheless, to be placed on the banks of the Merrimack; and the exhaustion of that power, in spite of the start she made, will, unless it be replaced by a new one, surely put a stop to her growth, and to the further increase of her annual contributions to the stockholders of the Boston & Lowell Railroad Company.

The case of Worcester, however, affords an even more striking illustration than Lowell of the extreme importance to the railroad corporations themselves of adopting such discriminating policy as that here suggested. In the variety and remarkable success of its industries Worcester is, perhaps, as distinguished a monument as can anywhere be pointed out to the ingenuity and enterprise of New England. Crowded with manufactories, the successful operation of all of which depends, in some degree, upon power, this city has almost no source of power except such as is brought to it from without. Its annual consumption of coal amounts to at least 100,000 tons, and the heavy tax on power which the railroad companies centering at Worcester agree in levying, affords a good illustration of that policy against the continuance of which the Commissioners are contending. The strong case of the Washburn Iron Company was referred to at some length in the first annual report of this Board (p. 41). It there appeared that the amount paid by this company for carrying coal each year, in excess of the entire cost of such carriage, with a reasonable profit of fifteen per cent. added thereto, was some \$18,000. This power tax was equivalent to a municipal tax of about \$82.50 per thousand upon the assessed valuation of the company. An equally striking instance in point is furnished in the Washburn & Moen Manufacturing Company, also established at Worcester. This

sideling its character. The result has been a constant and large increase of the area devoted to the growth of peaches, strawberries and other fruits. And * * * great profits have resulted to the fruit-growers, encouraging them to invest more and more capital and labor each year in the cultivation of fruits and vegetables."—*Thirty-fourth Annual Report (1871), p. 5.*

company probably does the most extensive business as makers of wire of all kinds in the United States. They annually pay to the railroad corporations from \$60,000 to \$65,000 on the freight of raw materials alone. For power they are almost wholly dependent on coal, of which they use about 15,000 tons per annum, and this is brought to them over four roads at rates varying from 2.38 to 4.07 cents per ton per mile. The Commissioners are informed by the officers of this company that "the chief obstacle to a present increase in our business is the high rate of railroad transportation from the seaboard. We should be enabled to successfully compete with any manufacturing point in the United States could we have any considerable reduction in the cost of transporting raw material: our profits also would be largely increased, as our works are extensive, and fully equipped with improved machinery and facilities for doing much more than is now done."

Here, then, is a single establishment, the presence of which in Worcester involves the receipt of \$60,000 a year to the railroads centering there on the carriage of its raw materials alone. Indirectly, through the carriage of its manufactured products, the travel and incidental business which its operations involve, its annual railroad value would probably amount to at least twice that sum. It becomes of interest, therefore, to make some estimate of what it really costs the railroads to supply this source of their own profits with that raw material of power without which it must cease to exist.

Four seaboard railroads center at Worcester, over all of which more or less coal is carried. These vary in length from 43 to 63 miles, and all charge what is practically the same rate. The longest route is from Boston; the shortest from Providence. The rates from the nine to Boston are, however, materially higher than to Providence, so that, in order to equalize matters and somewhat divide the business, while the 43 mile route charges \$1.75 per ton, the 63 mile route only charges \$1.50. Owing to the recent construction of certain competing roads, however, which have not yet had time to agree upon a combined tariff, the charge of \$1.75 per ton to Worcester is not insisted upon in the case of coal shipments to points beyond that place, and in such cases the roads have, during the last season, been eager to deliver coal at Worcester to connecting routes at \$1.25 per ton, though they were thus deprived of the use of their cars during the time required for the longer journey. They, in fact, tax their own local business in favor of more distant points.

In their report for 1870 (pp. 38-41), the Commissioners endeavored to arrive at some estimate of what would be a reasonable charge, on the part of the railroad corporation having the shortest connection, for the carriage of coal from Providence to Worcester. Allowing 14 miles per ton per mile for haulage, 15 cents for the single terminal charge which devolved upon the company, and 15 per cent. for profit and contingencies, they expressed the opinion that a charge of \$1.10 per ton, in place of \$1.75, would amply secure the company from loss. Subsequent investigation has not enabled them to detect any error in these figures. On the contrary, estimates based upon other processes of reasoning are even less favorable to the corporation. According to the returns of 1870-1, the expense incurred by the Providence & Worcester Railroad Company in moving freight during that year was \$1.52 per train mile. Allowing the expense of running coal trains to have been fully up to this average, and charging such trains with the double trip, as they are presumed to go up full and to return empty, the entire cost of such round trip would seem to be $\$1.52 \times 86 = \130.72 . The usual load of a coal train is about 250 tons, which, at \$1.75 per ton, would seem to amount to \$437.50. Allowing the company, in addition to its regular train-mile expenses, which, however, include these items, 20 cents per ton for terminal charges at Providence, and 20 per cent. for contingencies and profit on the carriage of raw material, the entire charge per ton, based on their own returns, with large extra allowances, would seem to be 82 cents instead of \$1.10, as previously estimated by the Commissioners, or \$1.75 as actually charged by the company. The real cost of carriage on a full train, estimated on the company's returns, would seem to be 52 cents per ton.

In selecting the two cases of Worcester and Lowell for comment, the Commissioners do not desire to be understood as expressing any particular censure on the railroad companies which undertake to supply those two cities. They require examples to illustrate their meaning, and they take them wherever they find them. The various communications which have been made to them lead them to believe that other illustrations, equally effective, could easily be found; the Commonwealth abounds in them. As a general rule, every town of 30,000 inhabitants in Massachusetts consumes in the neighborhood of 100,000 tons of coal per annum; and this consumption increases or decreases in almost exact proportion with the rise or fall of price. It is probably safe to say that 3,000,000 tons of coal are yearly brought from without into New England. The quantity is destined, with the growth of our industry, to be indefinitely increased.

The influence of this question on the increase and course of population in Massachusetts has not hitherto been fully appreciated. Fifty years ago, when the career of New England as a manufacturing community began, there was not a town in the State away from the seaboard of over 4,500 inhabitants: Worcester had 3,000, Springfield 4,000; Lowell and Lawrence had not been incorporated. Then took place the rise of the water-power towns, and the tide of population and of wealth flowed to the interior. Within the last few years, for the reasons already stated, this tide has again turned to the seaboard, as coal-power is found to be as cheap and more reliable than water, and Fall River, New Bedford and Salem are more accessible to the sources of supply than Worcester, Lowell or Chicopee. The next and final turn of this tide may now with tolerable certainty be foretold, depending as it does upon a simple question of carriage.

The transportation of coal is comparatively a new question for New England, and one as yet but little understood. It is interesting in this connection to consider what is the probable difference in cost between the amount of coal now annually brought into New England at the mouth of the mine and in the hands of the consumer. During the present year, the price throughout New England may be roughly averaged at \$8 per ton; on the cars at the mouth of the mine the cost has been \$1.75. The difference between these two prices, \$6.25 on 3,000,000 tons, or \$18,750,000 may be taken as a fair approximation of the amount paid during 1871 to the transporters and middle men engaged in forwarding this one staple. Meanwhile the coal fields are not more than 375 miles from Boston, and are perfectly accessible by all rail routes, which would obviate all breaking of bulk and demurrage as well as insure a reliable supply at every season of the year. Under these circumstances, it is wholly improbable that the present inconvenient and expensive method of supplying the commodity will long continue. Not only will all the interior towns of the State, at a very early day, receive their coal supply direct from the mines, and thus more readily than from the seaboard, but the Commissioners themselves entertain no doubt that Lowell, Boston and Providence will do the same. London, though much more accessible to the English mines by water than Boston is to those of Pennsylvania, has for years received the larger part of her coal direct by rail, and at rates per mile which would at present prices reduce the cost of coal in Boston to \$5.50 per ton. So great an advantage is land carriage in England obtaining over carriage by sea, that a direct line, to be wholly devoted to the carriage of coal, has recently been projected from the seaboard collieries of Newcastle to London, itself on tide water. During the past year, a similar project for a narrow-gauge road, to be exclusively devoted to the carriage of coal, running from the mines of

Pennsylvania to the center of manufacturing New England, has been brought to the attention of members of this Board. The projectors of this enterprise were the owners of coal fields, and proposed to build the railroad as an incident to the mining business, regarding it merely as a part of their machinery for getting the product of their mines to a market. The project was a bold one, and the Commissioners have no means of knowing whether it will be carried out. It is difficult, however, to see any reason why, if it were carried out, it should not prove a success. The consumption of coal in New England is limited only by its price. Now 3,000,000 tons a year, there is no reason, except cost, why it should not rapidly be increased to 6,000,000, and even 10,000,000 tons. A company which could afford, as was in this case claimed could be done, to lay coal down in Worcester at \$6.00 per ton at all seasons of the year, could almost from the start depend upon as large a business as that of the Reading Railroad.

Meanwhile the all-rail movement of this staple will not depend on the carrying out of any such proposed undertaking. Within the last few months, for the first time, a direct connection of uniform gauge by rail has been effected between Boston and the mines of the Delaware & Hudson Canal Company, by way of Albany. There can be no doubt that at a very early day a traffic over this route will be developed which will successfully compete with the water transportation not only to the interior towns of the State, but as far as Boston.

In pressing their views upon this subject on the consideration of the railroad officials the Commissioners have frequently been met by an inquiry as to what they considered a reasonable rate per ton per mile for the carriage of coal. This question, in its general form, they are not prepared to answer; neither do they believe that a specific answer to it is possible except where every condition entering into the cost of transportation is first definitely established. Few things are more fallacious than the usual estimates made in answer to inquiries as to what it costs to move a ton of freight; yet the answer to the question of what is a reasonable charge for moving it, necessarily depends upon what it costs to move it. A given railroad company may by a system of averages arrive at some general results upon this subject, deduced from its individual experience, asserting that the cost is one, two, three or more cents per mile. When, however, this statement is generalized upon and made to cover the whole railroad system, creating, as it were, a standard of cost, the result is no less deceptive than it would be to argue as to the cost of raising a bushel of wheat or a barrel of potatoes from the experience of a single farm, or a particular district of country. The cost of moving freight varies, under given circumstances, at least as much as the cost of raising crops. In the one case it depends upon soil, climate, cost of labor and the amount raised, with the appliances used for raising it; in the other upon the value of money, the cost of construction and operation, including wages, fuel and material; also upon the quantities seeking transportation, the regularity of its movement and the facilities for handling it. Take for instance a single item in the cost of movement from the accounts of the Boston & Albany and of the Pennsylvania railroads—that of fuel. In 1871 every ton of coal used by the Boston & Albany cost the company \$8; during the same year it cost the Pennsylvania road, operating at the mouth of the pit, \$1.50 per ton; when, therefore, the cost of movement as deduced from the experience of the Pennsylvania road is accepted as generally correct and applied to the Boston & Albany, a very considerable item of difference is lost sight of. The Commissioners do not, therefore, propose to commit themselves to any tariff on coal as now carried by the various roads which they believe would in general terms be pronounced "reasonable"—in each case this must depend upon the peculiar circumstances of that case. A concession which one road could make with safety would bankrupt another, for there are roads in this State, young, poor, built in great degree to carry coal through an undeveloped country, which are in no condition to make any considerable concession. To all such, the remarks of the Commissioners are intended to apply only in a limited degree; other roads again run through populous manufacturing districts where each concession is felt almost at once in an increased production; it is to these last that the Commissioners have especially addressed themselves.

The principle of concentrated reduction is no less applicable however to fares than to freights. Hitherto it has in this State only been applied to short, local travel; it remains to be seen what effect it would have if the reduction were made under certain conditions, as it is in Europe, in the form of "return tickets," for greater distances and in proportion to distance traversed. In this case, for instance, persons residing at Pittsfield might be induced by more favorable terms to go to Boston over the Boston & Albany, rather than to New York over the Housatonic; in the other case, a concentrated reduction on short travel, especially in the neighborhood of trading centers, has tended to build up thick settlements along the lines of the roads. In regard to this last form of reduction more than one railroad official has met the suggestion of the Commissioners with an answer which strikes them as fallacious in the extreme. They have produced the returns of different stations on the lines of their roads, and have claimed that the commutation, or season-ticket business, for instance, was the least remunerative that they did, pointing to the small aggregate sum annually received for the daily transportation of large numbers of persons. In presenting the case in this aspect, they, however, seem wholly to ignore the fact that nearly every one of these commuters represents a family; that each member of this family not only travels constantly over the road at the regular rates of fare, but that the family is an integral part of a local community, every member of which has annually to pay the railroad company so much for transportation. The commuter at low rates is to one class of stations what cheap coal is to another; a source of profit, perhaps even in itself a burden and a loss, but yet as stimulating a development which results in the demand for well nigh innumerable services from the corporation of a profitable nature, this burden is to the railroads only a necessary part of the outlay of their business. The case of Wollaston, already referred to on the Old Colony & Newport road, is an illustration in point. The policy of the road has been one element in leading to an increase of passenger traffic at this point from 12,793 in 1869 to 48,270 in 1871. The receipts from season ticket passengers meanwhile, owing to the free-pass inducement held out to those building houses, increased only \$283.42 in these years, but the general receipts from other classes of travel increased from \$1,332.75 to \$5,349.74. Looking at the receipts from season tickets alone the corporation was rapidly losing money; looking at the receipts from those whom the season ticket passengers brought in their train, the experiment was a singularly successful one.

Indeed, the only reductions in tariff charges which the Commissioners can now see their way to urge on the corporations, is the steady and tentative one which they have already indicated. Progress through this method is both safe and sure, the advance being made step by step. If, for instance, a cheapened supply of power stimulated industry to such an extent that the net receipts of any road increased instead of falling off, then the public might reasonably demand of such road another step in advance. This might be the concession of a drawback of a given proportion of the regular tariff charges in the case of all articles of raw material certified to be used for manufacturing purposes on the line of the road or of connecting roads. Such a system, moving forward only so fast as results reveal themselves, the Commissioners believe to be both progressive and conservative, affording ample protection to the interests both of the railroads and of the community, and this course they feel a confident hope has already been entered upon.